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Contributions to HYGEIA *are considered, and, if accepted, paid for. Stamps for the return of unaccepted manuscripts should be enclosed. All communications should be addressed to* HYGEIA, *535 North Dearborn Street, Chicago, Illinois.*

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Poster by Virginia Loomis, Glenville High School, Cleveland, Ohio; awarded a prize in HYGEIA *health poster contest.*

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HHW

Good Queen Elizabeth,
Wise Queen Elizabeth,
'Tis shocking to say so
(Consider her day, though)
Ne'er saw a potato.

Till Sir Walter Raleigh,
The gay Walter Raleigh,
Obtained from some grandees,
Some gay Spanish grandees,
A ship from the Andes.

Then Sir Walter Raleigh,
The gay Walter Raleigh,
Told her to bake them;
"So tasty you make them,
A queen can't forsake them."

Said Queen Elizabeth,
Good Queen Elizabeth,
"From now on you may know,
I'll never a day go,
Without my potato."

Suggestions for Coloring This Page with Crayon

Make the coat brown with yellow bands; vest and collar yellow; stockings green; breeches dark red; hat violet; ship brown and red with green stripes; sails gray.

Duplicates of this poster mailed to any address, postpaid, at 40 cents a dozen. No orders for less than a dozen.

The Dog's Gift to the Relief of Human Suffering

WALTER B. CANNON

WHEN an automobile lacks power, runs irregularly or makes strange noises, the owner, if he is wise, takes the machine to an expert. The expert knows the uses of each part, the signs of its disorder and the way to remedy the trouble. He has learned this by observing how the machinery works and how its action becomes disturbed. Conditions are similar for the human body. Experts in knowledge of the human body, however, have little opportunity to watch its activities directly. Instead, they study the bodies of lower animals.

Proposed Legislation

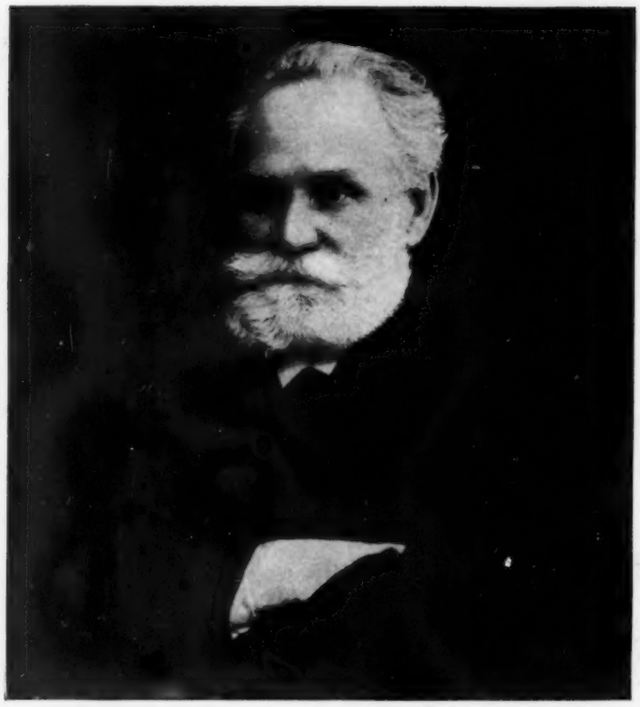
In examining the workings and the disorders or diseases of the various organs of the body, the investigators have employed many lower animals—rats, mice, guinea-pigs, rabbits, cats, dogs and monkeys. Antivivisectionists aver that even when an animal is made incapable of feeling pain, man has no right to look into its body in order to learn how the parts act. There are others who say they do not object to experimenting on most animals, but they would spare the dog. They point out that the dog occupies a special place in man's affection; he is man's friend and companion, always loyal, always devoted and faithful in spite of poverty and misery; he is ready to protect, to serve and even to die for his master. In England and also in the United States, legislation has been proposed prohibiting the use of dogs for medical investigation. The argument has been advanced that dogs performed important services in the World War and thereby earned exemption from further service in the laboratories. A review of medical progress proves that the dog has given incalculable aid to man in revealing the ways in which organs of the body work, and in disclosing the real nature of important diseases and the means of effectively treating them. Knowledge of these great benefits to mankind should increase our sense of indebtedness to the dog.

The marvelous growth of modern medical science began with Harvey's discovery of the circulation of the blood, about 300 years ago. Among the animals in which he studied the visible motions of the heart was the dog. Since Harvey's time that animal has served in many investigations of the disorders of the heart action, and has given information which is used daily by physicians in judging heart disease in man. Sir Thomas Lewis, perhaps the foremost living authority on this subject, testifies that the painless sacrifice of a relatively small number of dogs has yielded "a wealth of knowledge which so long as medical science exists will continue to confer great and lasting benefits on mankind."

As men and women pass into the later years of life they are likely to have an increasingly high blood pressure; it may become dangerously high. When this condition is found, suitable hygiene must be instituted to prevent danger. The indirect means of determining the blood-pressure in man was proved accurate by tests on dogs. A sufficiently large animal had to be used to permit comparison of the direct and the indirect measurements of blood pressure; of the common domestic animals, the dog was most suitable. Whenever the physician applies the simple cuff to the arm to learn the blood pressure, he and his patient should remember the debt owed to the dog.

In civilized countries all over the world the method of artificial respiration employed to resuscitate persons apparently drowned, the victims of electric shock, and the unfortunates overwhelmed by noxious gases, is the so-called "prone pressure" method. It was devised by Sir E. Sharpey-Schäfer, professor of physiology at Edinburgh University, and was first proved efficacious by tests on a few dogs which were drowned and revived. They were selected rather than other animals because they alone had chest walls nearly enough like man's in resiliency to serve the purpose. The "prone pressure" procedure has already been the means of saving innumerable human lives, and it will continue its beneficent service.

In no realm has progress been more rapid or more serviceable to mankind than in surgical technic. When a new operation must be tried, it may be attended by great risk. Shall the risk be taken by the sick man or woman or by a lower animal? Small animals are usually too



Pavlov, the great Russian physiologist and surgeon to whom we are indebted for a simple method of obtaining pure gastric juice.

small. Again, the large size of the dog is important, and many operations which are now performed daily on man were first tried on the dog. Cushing, the renowned brain surgeon, has testified that knowledge of ways to operate on the pituitary gland, a small body at the base of the brain, was derived from a series of surgical experiments on dogs and that every patient operated on for pituitary disease and thereby possibly saved from a life of blindness may thank the dog for this blessing. On the dog, also, the amount of kidney substance, as well as the amount of the small bowel that can be safely removed—questions made important by accident and disease—was first learned by surgical tests. The dog helped in discovering methods of uniting the ends of the cut bowel and methods of uniting the stomach with the bowel by way of a new opening. By experience with the dog, surgeons have learned to operate on the chest. Operations on the heart, even on the interior of the heart, were first perfected on the dog and later done effectively on human beings. In this way, too, the best ways of operating on the lung and of closing the chest wall were determined.

Among common domestic animals the dog is especially useful because omnivorous. Almost all that we know about the work of the digestive glands, and the course of digestion of different foods in the stomach and intestines has been learned by experimental studies on dogs. In 1904, Pavlov, the noted Russian physiologist, was given the Nobel prize in medicine for his numerous contributions to medical progress by such studies. The well known children's disease, rickets, has long been a mystery, and the rational treatment of it has awaited the explanation. By feeding experiments on puppies, the cause of that disease was found to be absence of an essential food factor commonly present in animal fats. The natural prevention or cure of the disorder was at once obvious, and now sufferers from rickets, both human and animal, can be properly cared for.

Credit Dog with Progress in Diabetes Treatment

Another grave condition afflicting mankind is diabetes, a disease characterized by defective utilization of starchy food. Almost all that we know about the cause and relief of diabetes has been learned from dogs, because they, being omnivorous, could be fed starchy food, meat, fat and any desired combination. Two German investigators, Mehring and Minkowski, found that diabetes appears if the pancreas is removed. Later, Sandmeyer showed that feeding starchy food causes diabetes if the pancreas has been previously damaged; starchy food overburdens

Courtesy of Dr. F. G. Benedict

This picture was taken in Petrograd. It shows a group of dogs used in Pavlov's laboratory. These dogs have aided man in making a great medical discovery. They are perfectly happy and healthy and at no time do they suffer pain.

the weakened organ. Still later, Allen demonstrated that if the weakened pancreas is being overburdened, its service to the body can be preserved by keeping the intake of starchy food within the narrowed limits of pancreatic ability. Finally, a few years ago, Banting and his collaborators proved that an extract of the pancreas, if injected into the body, can abolish the diabetes due to absence of the pancreas. By that discovery many of the most dangerous features of diabetes were placed under the control of physicians. Every step of this progress must be credited to the dog. It has been estimated that in the United States alone there are now about 1,000,000 people who already have diabetes or will develop it. Formerly, it was a quickly fatal disease in young people. E. P. Joslin, the distinguished American authority on the treatment of diabetes, has suggested that every diabetic child should have a dog to care for and love in recognition of the dog's life-saving service.

Still another way in which the dog is helpful to mankind is in the proving of drugs. The strength of some of the most important medicinal agents can be learned only by being tried on lower animals, the dog among them. Thus, according to United States requirements, the drug epinephrin, which is used to check hemorrhage and to abolish the distress of asthma, must be standardized by canine tests. Pituitary extract, an agent commonly employed in childbirth, a powerful agent which may be useless if too weak and dangerous if too strong, has its strength determined by its effects on guinea-pigs and dogs. By experiments on dogs, the dangers of chemical substances have been discovered. In this way wood alcohol was first shown to be harmful and capable of causing blindness and death. Dogs are serviceable, therefore, not only in assuring safe and curative medicines, but in warning against dangerous poisons.

In certain conditions man and dog suffer alike; what helps man may help the dog as well. For example, both may have rabies. Largely by means of dogs, the famous French investigator, Pasteur, worked out his preventive treatment for rabies, a treatment which has reduced the mortality of persons bitten from 16 to less than 1 per cent. Now dogs are being treated in a protective manner, so that they do not become rabid. Hookworm is an affliction common to dogs and man. The life history of this parasite, its method of spread, and the means of preventing its entrance into the human body were developed by experiments on dogs. According to Dr. Heiser of the U. S. Public

Teddy, thin and listless as above, celebrated his sixth birthday on July 10, 1922, a diabetes patient. He weighed 27 pounds.

Insulin treatment was begun with the result that on January 16, 1923, he had become the sturdy fellow on the left, weighing 40 pounds.

On his seventh birthday, July 10, 1923, Teddy was the robust rider of the Irish Mail on the right, and weighed 49 pounds, a gain of 22 pounds in a single year.

Health Service, there are in tropical countries more than 100,000,000 people infested with hookworm, many of whom are suffering from weakness, sloth and wretchedness as a result. For the treatment of the disease chenopodium has been found a highly efficacious drug, but of varying strength. Tests on dogs are absolutely necessary in order to determine the dosage. The welfare of hundreds of thousands of human victims of hookworm disease is dependent, therefore, on the insight and assurance which experiments on dogs have yielded.

There are at least two other afflictions which beset the dog in such a way as to bear on human diseases—distemper and cancer. Distemper resembles influenza in its characteristics. Both distemper and influenza still remain mysterious disorders; the former a grave menace to the dog, the latter capable of killing millions of people in a world-wide epidemic. Active investigation of distemper is now in progress and the results may throw much light on the means of dealing effectively with influenza in man. Cancer is slightly more common among dogs than among men; in a dog hospital in Berlin 8 per cent of 60,000 dogs had cancer. Here, the dog and man are caught in the same net; any discovery which will save one will save the other. Medical investigators have faith that the same experimental methods which, by leading to further discoveries in physics, chemistry and biology, have enormously increased man's control of natural processes will give man control of distressing and destructive scourges, such as influenza and cancer, which still remain unchecked.

The Great War Against Pain

The argument has been mentioned that since the dog served faithfully in the World War, he should be exempt from service in the laboratories. Persons who make that argument do not realize that the medical profession is continuously engaged in a much greater war than the World War; theirs is a struggle against needless pain, against maiming, crippling and premature death, which are striking constantly at men, women and children and are taking an enormous toll. The victories won have been chiefly due to insight and power derived from the help of lower animals. Man is as fully justified in calling on the dog for help in the struggle against pain and disease as he is in asking his aid in actual warfare; more so, for the dog benefits by the successes. Dogs are needed for experimentation because they can live a healthy life in relative confinement, because they are large, because they eat all varieties of food, because they have certain diseases in common with man, and because they are so numerous that in large cities thousands of dogs are killed every year, merely to clear the streets; of these thousands, a relatively small number are drafted for use in the conflict against disease.

It must not be thought that in the use of dogs for combating disease they suffer as they do from the wounds and mutilations they are subjected to in battle from bullets and bursting shells. In the United States, all institutions in which animals are used for medical and biological research have adopted regulations providing for the comfort and sanitary surroundings of the animals. All operations must be sanctioned by the laboratory director, who is held responsible for the importance of the problems studied and the propriety of the methods applied. Furthermore, the regulations require all operations likely to cause greater discomfort than anesthetization itself to be done under anesthesia and to be followed by painless death. Only the director can make exceptions to these last provisions, and he can do so only in the rare cases in which anesthesia, or death of the animal, would defeat the purpose of the experiment.

The instances that have been cited indicate that the dog has played an essential rôle in bringing relief from pain and freedom from avoidable death. Space permits only the mention of the dog's gifts to man in revealing the nature of thyroid disease, of parathyroid disturbances, of caisson sickness, of the history of parasitic affections such as trichinosis and tapeworm infestation, of malignant jaundice and of many other conditions. No point has been made of the important insight which the dog has given us into the workings of the nervous system. Nothing has been said concerning the value of the dog in relation to the necessary training for surgical technic, or for the delicate procedure of the transfusion of blood. Enough has been stated, however, to show that the dog has given to mankind gifts of inestimable value.

The loyalty, devotion and self-sacrifice of the dog have often been emphasized; these noble qualities have their loftiest and most perfect expression when life itself is surrendered for the sake of the object worshiped. We know that the sacrifices made by dogs have made rich and manifold contributions to human welfare. We also know that much remains to be learned before both dogs and men shall be free of dreadful scourges which menace their health and existence. Because the dog has rendered to us and his kind such immeasurable benefits in the past, we turn to him now with assurance of further benefits. Of the dog used by the medical investigator, William James wrote, with appreciative understanding: "If his poor, benighted mind could only be made to catch a glimpse of the human intentions, all that is heroic in him would religiously acquiesce." We who know the beneficent results coming from these "intentions" should do homage to the dog, by which they come.

A Health Project on "Yan" Side of the Mountain

L. B. McBRAYER AND THERESA DANSDILL

"IT IS hard to teach an old dog new tricks," says the aphorism, but Prof. W. James, eminent psychologist, is authority for the statement that an old dog can be taught new tricks if he wants to learn. The health project carried out on "yan" side of the mountain is evidence that it matters not how old in years we may become, there still lives within us the power that enables us to learn. It needs an urge, a dream, a goal that leads us, sometimes almost compels us, to learn that which never could have been mastered by one who had no vision. But this is getting ahead of the story.

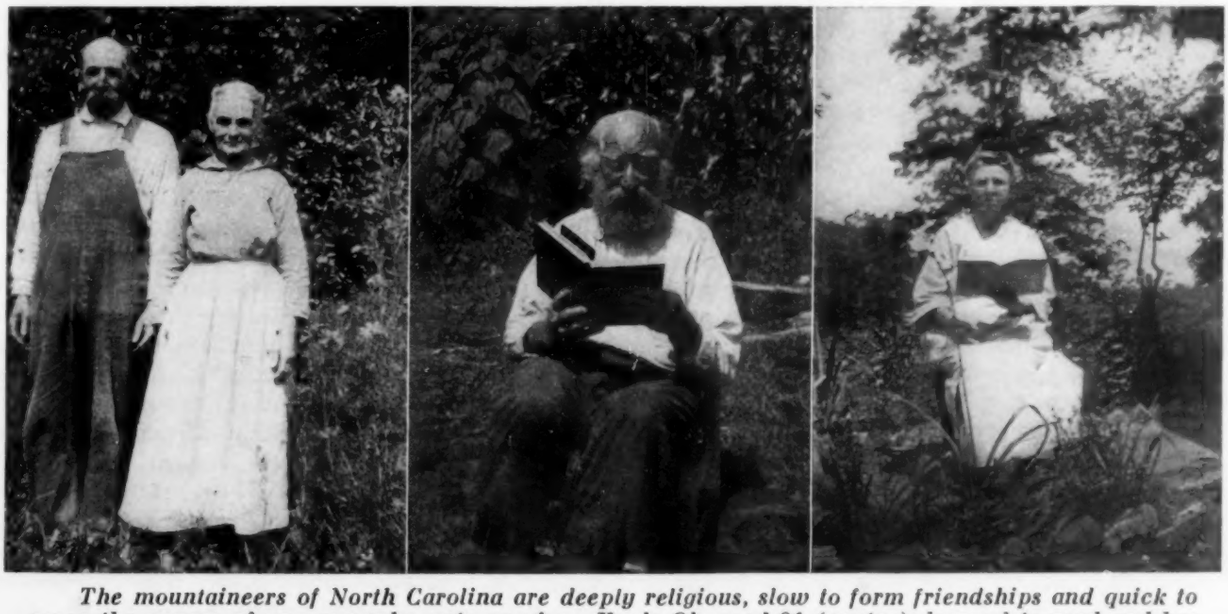
Rain was falling—real rain, not the gentle, ladylike mist which brushes the brow like an elfin caress, light as thistle down. It came in murmuring, thundering torrents, pelting the car with the hammering thuds of baffled demons of the mountain. Beckoning, warning silver-like threads flashing from the headlights of the car accentuated the mysterious darkness of the woods. Lightning flashed, clouds thundered, echoed, crashed and reechoed; the humming motor carried the travelers up to the top of the mountain and part way down the other side.

When the travelers thought the storm would hurl them down a cliff, a light from a little schoolhouse flashed in view and a merry voice called out, "So glad you came; we are waiting for you." So the moonlight school, which was not in the moonlight at all, became a reality to one member of the group, instead of a picture woven from the warp and woof of hearsay and colored with the brush of imagination.

The idea held by many persons in all parts of the country is that these brave-hearted mountaineers are strange, uncouth, ignorant no 'count folks. In many instances the men and women in the moonlight or adult beginners' school are just the opposite. The mountaineers of North Carolina are deeply religious, stern, sincere, unchanging, slow to form friendships and quick to sense the veneer of any one who "puts on airs." They are loyal to any one fortunate enough to win their respect. The ancestry of many of these mountain folk can be traced as far back as William the Conqueror.

In most instances, the first settlers in these districts were well educated and taught their children the rudiments of learning. They passed on; the succeeding generation paid less attention to learning, the next one even less. They lived more and more to themselves until the time came when they did not feel the need of an education.

Then why did these people, who never learned to read, write or "figger," come out in the storm



The mountaineers of North Carolina are deeply religious, slow to form friendships and quick to sense the veneer of any one who puts on airs. Uncle Ob, aged 81 (center), learned to read and has read the New Testament through six times within the last two years. He said: "I didn't know that a body could learn to read after he growed up"

"Them that wants to be clean, clean they're goin' to be." This is the result of a health lesson

to go to school from 7 to 9 p. m.? Why did they not learn to do these things in childhood or youth, which is the time when the mind, free from care, responsibility or economic problems, can absorb book learning more easily than later, when the years bring burdens, joys, duties to home and obligations to family.

An Isolated People

Five years ago the smooth, hard surfaced highway, which was traveled so easily in the autumn storm that night, was a rough, rutted, almost impassable road following a waterway which the spring freshet left in its wake as it journeyed seaward. The gummy, sticky mud clung to wheels with an unshakable grip that powerful horses could not loosen. There were times in the year when the road could not be traveled even on horseback. When dry weather came it was as rough and rocky as the way to Dublin. Thus there existed an isolation almost complete, so far as communication with the outside world was concerned.

It was not always because of impassable roads that no schooling was had; sometimes it was due to the idea that people could not learn after they were grown.

There were few free schools in North Carolina in the early history of the state; if they were established, they were open but a few weeks or months each year. In several instances men and women with the love of humanity in their hearts came to these shut-in communities, lived there and taught the people. More often the instruction in school was for so short a time that the pupils forgot all they had been taught before the next term of school opened.

The earnest men and women groping their way through the maze of reading, writing, arithmetic and correct English as they sit in groups at the tables answer the question, "Why did you never learn to read?"

One of the visitors that night had a tightening of the throat and a mistiness in the eyes as the pupils — adult beginners ranging in age from 22 to 81 years — stood and sang, "Lord, plant my feet on higher ground," the song which is always sung at the opening of the evening school session.

Here was a brave, manly boy 23 years old learning long division; there a little 65-year-old lady learning to write a letter; at another table a man 42 years old learning to write his name; farther down the line a short, stocky man of 54 learning that 4 times 8 is 32; near by a good-looking woman of 33 reading a primer. Every one was intent on the immediate task; each was there because in his heart was a dream which the gracious teacher was helping to make come true.

"I wanted to learn to figure so I could keep my own accounts in business," said a shoemaker. "It wasn't the fault of my folks that I never learned to read or do sums in school. They sent me, but I didn't see any reason why I should go, so I played hookey, went swimmin' and fishin' when they thought I was in school."

"I didn't know that a body could learn after he growed up," said a merry-eyed, hale old man of 81. "Ever since I been growed up I wanted to read the Bible myself, but I didn't know I could be learned."

"I came because I wanted to write to my boy," said the little gray grandmother. "He has a boy of his own and he says that he looks like me. I can read my Bible myself now; some day I will read Bible stories to him."

"I got tired making my mark," said a man of 56, one of the wealthiest landowners in North Carolina.

A representative of the North Carolina Tuberculosis Association came to Asheville to present the cause of health education before groups comprised of members of the Asheville Women's Club, Parent Teacher Association and Board of Health. This is one unit in the program which the North Carolina Tuberculosis Association is carrying on to lower tuberculosis infection. Clinics conducted by expert clinicians, sanatoriums, preventoriums and education are the weapons with which tuberculosis is slowly but steadily being driven from the state.

Mrs. Elizabeth Morriss, the gracious supervisor of the adult beginners' schools of Buncombe County, N. C., attended the series of talks given by the tuberculosis association and translated the ideas to function in her work with the same enthusiasm that she brings to anything that will help to lead her pupils to "higher ground." Health and good health habits are always emphasized in her work. There were elements in the method of health education outlined by

the North Carolina Tuberculosis Association that appealed to her and that she was sure would encourage good health habit formation among her beginners.

The modern health crusade, a method of health education promulgated by the National Tuberculosis Association, was used for the health project in the classes. There are eleven health procedures in this method, each one called a health chore. The word chore appealed to the beginners; it carried with it the idea that it was something to be performed daily and when done faithfully, contributed not only to personal comfort but to the well-being of the whole family.

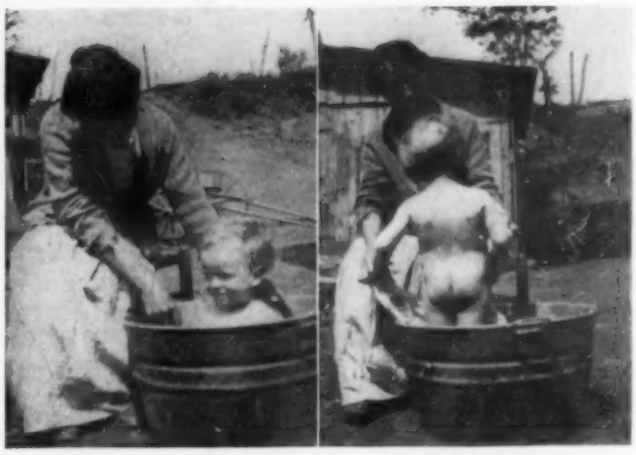
Daily Chores

1. I washed my hands before each meal. I cleaned my finger nails today.
2. I brushed my teeth after breakfast and the evening meal.
3. I carried a handkerchief and used it to protect others if I coughed or sneezed.
4. I tried to avoid accidents to others and myself. I looked both ways when crossing the street (road).
5. I drank four glasses of water but no tea, coffee nor any harmful drink.
6. I had three wholesome meals including a nourishing breakfast. I drank milk.
7. I ate some cereal or bread, green (watery) vegetable and fruit, but ate no candy nor "sweets" unless at the end of a meal.
8. I went to the toilet at my regular time.
9. I tried to sit and to stand straight.
10. I was in bed long hours last night, windows open.
11. I had a complete bath and rubbed myself dry on each day of the week.

If all the tuberculosis bugs and other bugs in existence could be destroyed, there would be no need for these rules. "What ought to be ain't what is," said one of the pupils, "and we are going to do what we can to keep well."

These eleven rules, kept faithfully, are as near an approach to prevention as any one can hope for, as long as tuberculosis germs flourish and are passed on to others by careless, thoughtless or uneducated infected persons. Being uneducated in health is a far cry from illiteracy. There are many who cannot read and write who also do not know the first principle of healthful living; there are M.A.'s and Ph.D.'s who are adult beginners in health education if the increasing death rate from heart disease, diseased kidneys, broken blood vessels and frayed out nerves is a criterion.

At the time the health rules were introduced to the class, the pupils had advanced far enough in their readers that they could read the chores themselves, and place an X after each one performed that day. When Mrs. Morriss and her staff first began to train the classes in health education, brushing the teeth was a new idea to some of them and some did not know about the care of a toothbrush.



A mountaineer Diogenes health crusader. "I'm doin' what I can to help folks keep well"

"I was so sorry I lost all my teeth before my last baby came," said one mother. "I chewed for all the other five when they were little, but this little feller had to chew for himself. But I guess it was a 'marcie' that I lost my teeth. I didn't know that chewing for him wasn't good for his health."

From Porcelain Tubs to Nearby Streams

Some of the beginners came from fine homes equipped with every modern convenience; they had established the bathing habit. Others came from modest little homes that contained only a basin for ablutions; they were clean and wore clean clothing. All their lives they had "washed off all over," but never associated this procedure with the word bath; a bath, to them, meant getting into a tub. A few pupils came from tiny cabins where bathing was performed in a nearby stream. One man said, "Here it is winter time. How does she expect me to take a bath when th' crick is all froze over."

"I slept long hours" was an easy chore to keep, but the joy was taken out of it for a few in the class by the words "with the windows open." Couldn't enough cold get in anyway without opening the windows in the winter time? It is hard enough to heat the house; why try to heat all the outdoors? But the record was there and the chore was clamoring for an X, so the objectors raised the windows a few inches. They did not get pneumonia, and found that they were not so chilly with fresh, moving air in the sleeping room as they were when they slept in rooms that contained static, impure air.

Teaching Food Values

The chore which read, "I drank no tea or coffee today," was omitted from the adults' list. Some concessions had to be made when the habits of a lifetime were being uprooted, changed or made stronger. Mrs. Morriss and her staff decided that if the classes worked well to acquire all the other good habits, that drinking coffee would not do enough harm to count.

A well-trained home economics teacher taught the housewives food values, garden rotation of vegetables and how to plan, cook and serve wholesome, sightly, appetizing, well-balanced meals. The women were willing to learn; they added health and happiness to their own health accounts and to the health accounts of their families.

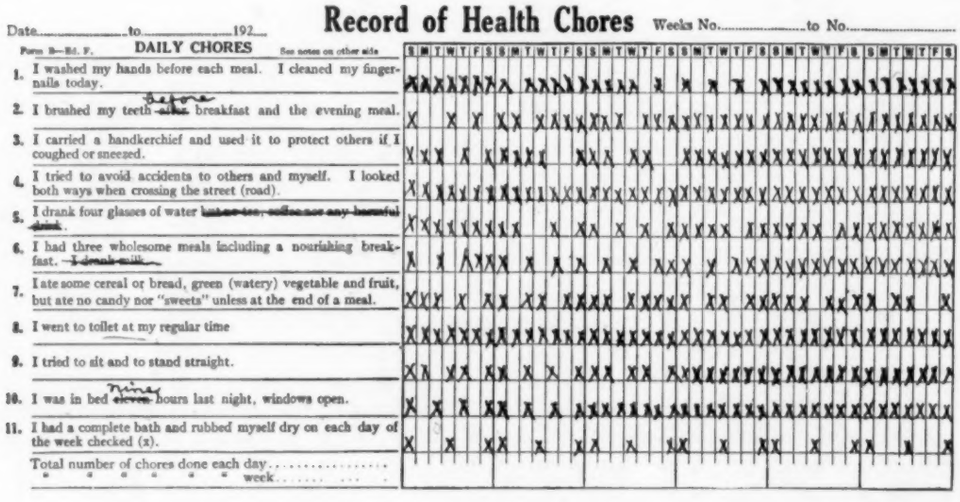
The majority of the members of the class kept the health chores faithfully. It gave them a new perspective; they knew what they could do to increase their own sense of well-being. Best of all, they worked side by side with their children, marking and checking the records together.

Every one did not acquire all the good health habits during the time scores were being kept, but a beginning was made, which in many instances will be a stepping stone to "higher ground" in healthful living. This is attained when muscles, nerves and vital organs function harmoniously because they are well trained through the formation and the daily practice of good health habits.

After a meeting of the state illiteracy conference last summer, the little gray grandmother brought a card to the representative of the North Carolina Tuberculosis Association. It had on it the words loved by every Tar Heel, no matter where he lives. Her face fairly beamed as she said, "I can read it to you."

> Here's to the land of the long leaf pine,
> To the summer land where the sun doth shine,
> Where the weak grow strong
> And the strong grow great.
> Here's to down home in the Old North State.

It is through health projects like that which Mrs. Morriss and her staff carried on that the weak shall grow strong, lighting the torch to wholesome living by precept, example and daily practice. We take off our hat to the classes on "yan" side of the mountain.



Record of Health Chores

Date.....to.....192.... Weeks No.....to No.....

Form B—Bd. F. DAILY CHORES See notes on other side

1. I washed my hands before each meal. I cleaned my fingernails today.
2. I brushed my teeth ~~after~~ before breakfast and the evening meal.
3. I carried a handkerchief and used it to protect others if I coughed or sneezed.
4. I tried to avoid accidents to others and myself. I looked both ways when crossing the street (road).
5. I drank four glasses of water ~~but no tea, coffee nor any harmful drink~~.
6. I had three wholesome meals including a nourishing breakfast. ~~I drank milk~~.
7. I ate some cereal or bread, green (watery) vegetable and fruit, but ate no candy nor "sweets" unless at the end of a meal.
8. I went to toilet at my regular time
9. I tried to sit and to stand straight.
10. I was in bed ~~eleven~~ nine hours last night, windows open.
11. I had a complete bath and rubbed myself dry on each day of the week checked (x).

Total number of chores done each day.....
" " " " " " week.....

This record of health chores shows the health achievements of Tabitha Parker, an "adult beginner," aged 60.

HYGEIA announces the beginning of a series of articles on "Plastic Surgery for Cosmetic Purposes." These papers will discuss such subjects as:

"The Dangers of Paraffin Injections."

"Removal of Fat from Abdomen, Thighs and Breast."

"Operations for Correction of Cross Eye and Squint."

"The Correction of Outstanding Ears."

"Reconstruction of Parts of the Mouth for the Correction of Cleft Palate and Harelip."

How to Put Humidity in Your House

E. P. LYON

IF YOU wish humidity in your house in winter, if you wish to get rid of the unnatural dryness, you will have to work for it and pay for it.

My efforts to get what I call reasonable moisture into my house in Minneapolis have led me to do experimenting for several winters and I have learned a lot.

The first thing I learned was that the air in my house in zero weather was dry—dryer than any natural climate on the earth. My family made little complaint, but the furniture voiced its dissatisfaction by many squeaks. That shows that man is more adaptable, or less responsive, than a chair, but it does not prove that the dry condition of the air is good for man. I noticed that my skin was dry and inclined to crack, that my nasal passages didn't feel right, and that I felt chilly when the thermometer indicated a reasonable temperature.

How dry was my house? To measure the precentage humidity I employed a hygrometer. This instrument consists of two thermometers. One is bare and dry. The bulb of the other is covered with wicking; this is called the wet bulb thermometer. To make a test, the wicking is saturated with water, and the instrument is whirled or fanned until the readings of the thermometers are stationary. Since evaporation cools, the reading of the wet bulb thermometer will be lower than that of the other. If you have the type of hygrometer that hangs on the wall, be sure to fan it vigorously before taking a reading. The wet bulb temperature will often fall several degrees before the correct reading is reached. As the instrument hangs on the wall there is a stationary layer of air about it. This air right about the wet bulb will contain more moisture than that out in the room. To get a fair reading the bulb must be fanned so as to get the full evaporative effect of the average air of the room.

When the wet and dry bulb temperatures have been determined, the relative humidity can be found from tables that accompany the instrument.

What Is Relative Humidity?

Air at any given temperature can hold as vapor only a certain amount of water. If air at any temperature is saturated with moisture, the humidity is called 100 per cent.; if half saturated, the humidity is called 50 per cent. This percentage is called the relative humidity. It is not an indication of the actual weight of moisture in the air, for the quantity of water that air can hold (the quantity required to saturate it) varies with temperature. At zero, air can hold only half a grain of water per cubic foot. It may be saturated, that is 100 per cent humid, but that is all it can hold. At 70 degrees F. air can hold 8 grains of water per cubic foot, or 16 times as much as at zero. Just hang up this fact on some convenient hook in your memory; it will help explain some of the difficulties I encountered trying to get reasonable humidity in my house.

Now as to the dryness of this house of mine. On January 20, 1924, I turned off all my humidifying apparatus; the next day, the outside temperature was 20 below zero and I got the following readings: In my living room, dry bulb 71 degrees F., wet bulb 48, relative humidity 12 per cent. Many houses have as low or lower humidity in zero weather.

Texas has the reputation of being dry. At El Paso I find that late in the afternoon the humidity is sometimes as low as in my house, but that the average, even in the dry season, is a good deal higher. In Death Valley, Calif., during five summer months the average was 23 per cent. Sahara is dry and the Egyptian tomb has kept old Tutankhamen nicely preserved for some 3,500 years. At Insalah, a station in the Sahara, the average humidity in summer is 25 per cent. On the other hand, a nice May day in our country may have 60 to 80 per cent humidity. With a temperature of 70 on such a day you feel comfortable, and if you are unconventional you take off your coat. But your house, in winter, at 70 may seem chilly because it is relatively very dry.

About the first thing I discovered when I began to try to get some moisture into the air of my house was that I couldn't keep it in. The rooms we commonly occupy—living room, dining room, study, and connecting stairway and hall—hold about 7,000 cubic feet of air. To saturate this thoroughly at 70 would take 56,000 grains or 8 pounds of water. Fifty per cent. saturation would require 4 pounds, or half a gallon of water. But the air and the moisture in the air go through a house as through a sieve. There are leaks around every window and door. Air even goes through the walls, floors and roof. Engineers usually estimate that the air of a

house changes once an hour with all doors and windows closed. Often the change is more frequent than this.

This has one advantage. No house in which a moderate number of people live is ever deficient in oxygen. There is never a dangerous amount of carbon dioxid from breathing. A house lacks humidity and air movement in winter; it usually has too much heat.

Another thing I discovered is that the textbook standards of humidity cannot be realized in our northern homes. Many of the books say 60 per cent. Even with double windows, such as our Minnesota houses have, this standard is not practicable. The windows and outside walls are cold, and at 60 per cent humidity moisture condenses on them and runs down to the floor. Once I opened a book case built in an outside wall and found the books covered with frost. A friend of mine was very proud of his humidity apparatus until he found a snow drift 2 feet deep in his attic. He tried to find where the snow got in, but found that it was his own snow precipitated in the cold attic from the moist air that penetrated to that room. If you want humidity, you'll have to work for it, but if you want it and can get 40 to 45 per cent, you will be doing well in cold winter weather.

Must Evaporate Gallon of Water an Hour

Owing to the leakage of which I have spoken, I find I must evaporate 20 to 25 gallons per twenty-four hours (a gallon an hour) to attain even a moderate result in my small house; it is part of the general heating problem. If we could only keep our heat in! But we cannot, for heat escapes as long as the air outside is colder than that on the inside. We cannot keep moisture in; it constantly escapes.

It took me a while to learn these facts. When I did, I saw the futility of the dish of water on the radiator and the other means ordinarily employed to provide humidity at home; they are insignificant. They may make you think you feel better, but the furniture suffers from no such illusions; it continues to squeak.

I tested out a number of the devices for sale—so called humidifiers. Most of them possess only a suggestive value. Several kinds that I tested would evaporate no more water in a day than a person does from his lungs, which amounts to a pint or more.

One must get clearly in mind the large quantity of water to be evaporated if any real result is to be attained. Twenty gallons (two thirds of a barrel) a day was what was needed for my small house!

Automatic Humidifying System Has Advantages

There are advantages to an automatic humidifying system. Few people will carry twenty gallons of water and fill the humidifying apparatus by hand, even though the apparatus is sufficient to do the work.

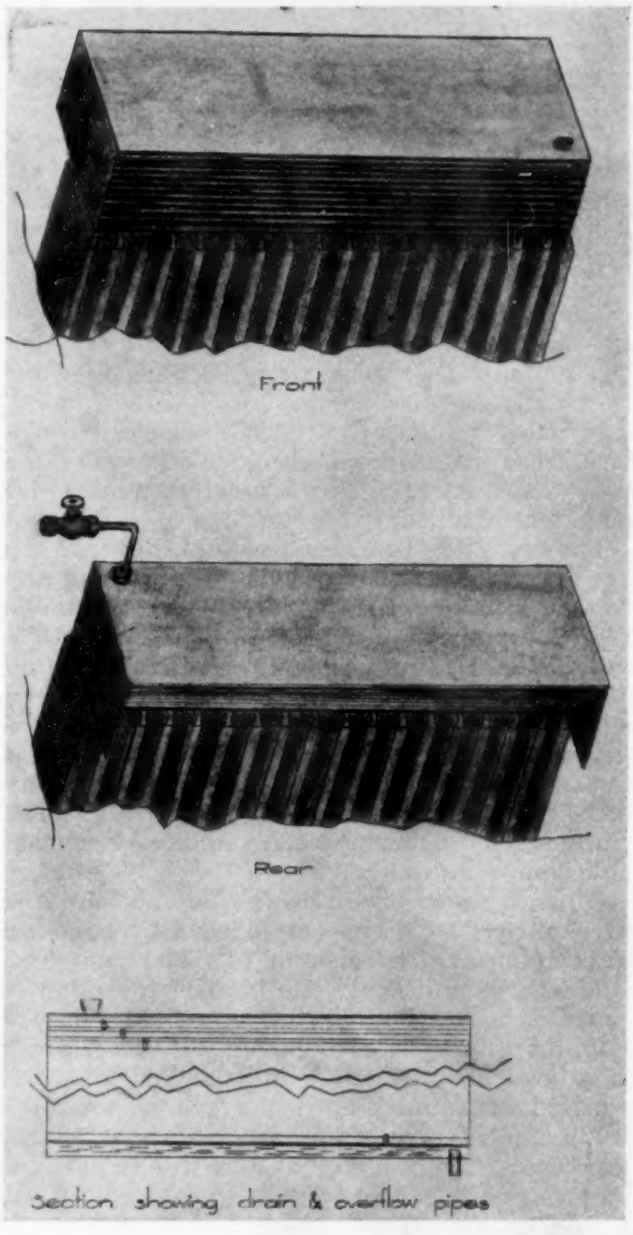


Figure 1.—A most effective radiator humidifier

If one should employ power outside the ordinary heating plant, for example, an air washer with fans and distribution system, moisture can be brought into the house. This, however, is expensive. Most of my experiments have been directed toward seeing what could be done with my hot water heating plant without other power or accessory heat.

I soon discovered that there were two important physical principles which I could make use of, a large water surface and a constant current of air over that surface. The devices illustrated here make use of these principles.

Figure 1 illustrates the most effective radiator humidifier I have been able to make; it consists of a number of trays, one above the other. The warm air rising behind the radiator passes

horizontally between the trays and out into the room. The draftsman has illustrated an apparatus of 12 trays—the more trays the more water surface. I have one of twelve trays; it is 30 inches long, and by actual test, it evaporated 3.1 gallons of water per day on the average throughout a month of cold weather. It evaporated more on cold days than on warm days, because the furnace fire is greater and the air passing between the trays is warmer on cold days. On cold days you need more evaporation because the air from outside, which is constantly entering the house to replace what leaks out, is usually dryer than on warm days.

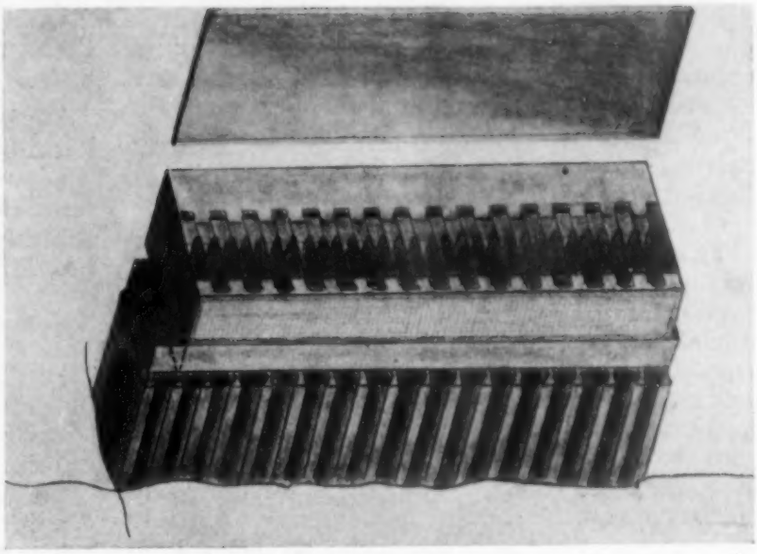


Figure 2.—Here blotters are used in a pan of water

The illustration shows how this apparatus can be made automatic. But the artist has made the supply pipe too conspicuous. In the one in my house, the supply is through an eighth inch copper pipe which comes up back of the radiator and permits a slow drop of water into the top tray. It runs down through the other trays and the excess runs off to the sewer. The humidifier should be as long as the radiator or even project a couple of inches at each end. The illustration shows the trays, spaced one fourth of an inch apart; it might be well to vary this, making the lower half of the trays three eighths of an inch apart. The upper trays have proved most efficient, probably because the warm current of air passes over these at a greater velocity.

This apparatus will never take a prize for beauty, but it is efficient and does the job. You will need one of these on each radiator to give moderate humidity for the whole house.

I have experimented considerably with wick systems. Figure 2 represents the details of construction of a radiator humidifier which has some advantages. Although not as efficient as the tray model just described, it is better looking and easier to fill, if hand filling must be depended on.

Again the principle of large surface is used; this time a large number of vertical blotters are used which dip at the lower edge in a pan of water. The principle of air current is also employed; the warm air rises behind the radiator and is conducted back of the pan and out to the front through spaces between the blotters. The apparatus is built in three parts—the pan, the support for the blotters and the removable top.

For ordinary radiators the pan, made of galvanized iron, is 6 inches wide, 2 inches deep and as long as the radiator. Do not expect a small humidifier to do much work.

The blotter supporter is made an inch or two shorter than the pan so that it can be shoved to either end, leaving a convenient place for filling. The ends and back of the supporter are made of galvanized iron; the front is one fourth inch galvanized screen. The ends are cut, as shown in the drawing, to fit down into the pan and to allow the water to flow freely when the pan is filled. At the top, a galvanized edge projects inward from the front and back. This edge is cut in at three quarter inch intervals, and alternate slips turned upward form a series of hooks. A cord strung across these hooks shoelace fashion supports the blotters, which are 9½ x 6 inches, folded once and laid across the cord. A large surface of wet blotter is thus presented to the warm air passing between the blotters.

The cover is simply a sheet of galvanized iron turned down a quarter of an inch all the way around. The apparatus should be painted the same color as the radiator.

I find blotters convenient and renew them once a year, when saturated with mineral left by the evaporated water. Probably a long strip of toweling would work as well.

This humidifier, under favorable conditions, will evaporate one gallon of water per foot of radiator occupied each twenty-four hours, but it will not average this amount; its efficiency is diminished when the blotters get full of deposited mineral matter.

One Humidifier on Each Radiator

One humidifier of this type will do little to raise the humidity in a house. A full length humidifier should be used on each radiator; a difference in humidity can then be noticed.

This type of humidifier can be made automatic by a supply and waste arrangement similar to the first type described. I have two of this type of humidifier, arranged so that they are automatic; they give no trouble except the annual change of blotters, and this takes but a few minutes.

Five years ago, and again recently, I experimented with a spray arranged in a hollow column with an air opening above and below. The idea is to draw off the hot dry air from the top of the room (often this is 10 degrees warmer than at the breathing level), and to return it to the bottom of the room washed, moistened and cooled.

The experimental apparatus consisted of a rectangular column 13 by 15 inches in horizontal section and 8 feet high. It stood in a shallow pan with a run-off to the sewer in the basement. On one side above the pan the side was open for a space of 16 inches; a baffle was provided to prevent the spray from being carried out into the room. Into the top and directed downward was placed a spray nozzle of the type used for spraying trees, and connected to the city water.

The spray causes a strong current of air through the column. Two forces contribute to this air flow, the friction of the falling spray and the cooling of the air itself.

The spray head is provided with a perforated disk, the hole having a diameter of .05 inch. The velocity of the current of air through the column when this disk was used was 345 feet per minute, and the water flowing through was 18 gallons per hour. Substituting a disk with .04 inch aperture, the air velocity averaged 290 feet per minute and the run-off 10 gallons an hour.

Since the cross section of the column was about one and one third square feet, it appears that there was passed through the column about 450 cubic feet of air per minute with the first disk and about 385 cubic feet of air per minute with the second disk. Thus the entire air volume of the first floor of my house might be expected to pass through the apparatus in something like fifteen minutes.

Spray Type of Humidifier Costs More, but Worth It

The air came out of the apparatus practically saturated and at a temperature of 50 to 60 degrees F. Tap water had a temperature of 36 to 40; the run-off water from the apparatus had a temperature of 56 to 58. The warming of this water involved a heat loss which adds slightly to the cost of operation, but the washing, humidification and circulation of air produced by this apparatus are desirable features and worth the extra expense, which I estimated was 2 or 3 cents a day.

As nearly as could be made out by measuring the run-off water, first with the air passing through the column and later with the column covered, the evaporation was about 10 gallons for twenty-four hours. Therefore, for adequate humidification of the whole house, the apparatus should be larger than that experimented with or duplicated in different parts of the house.

On a subzero day in January such readings as these were obtained:

No Artificial Humidity

Dining room: dry bulb 70; wet bulb 48; humidity 14 per cent.

Living room: dry bulb 71; wet bulb 48; humidity 12 per cent.

Study (upstairs): dry bulb 69; wet bulb 49; humidity 15 per cent.

After Spray Was Going Two Hours

(larger spray aperture)

Dining room: dry bulb 71; wet bulb 59; humidity 49 per cent.

Living room: dry bulb 69; wet bulb 55; humidity 40 per cent.

Study (upstairs): dry bulb 73; wet bulb 55; humidity 29 per cent.

The apparatus was set up in the dining room. The living room, a stairway and upper hall door opened to a study, a room 25 by 15 feet, on the second floor. It will be seen by these figures that the air movement and diffusion only imperfectly adjusted the humidity throughout the house, but that considerable effect was produced, even at a distance. The results would be better with the apparatus centrally located.

When I connected the spray to the hot water the evaporation was increased, but my hot water supply would not keep up the large drain of 10 to 18 gallons an hour. If one has a sufficient supply of hot water, this spray system may be just what he needs. The heat used to heat the water contributes to the vaporization and therefore is not an added expense.

I feel that this method of humidifying a house is promising and have so much confidence in it that if I should build a house I would have one constructed for permanent use. Of course it would have to be built into the house in such a way as to be concealed and convenient. Figure 3 depicts an arrangement in which the spray apparatus is placed in a closet. The closet is connected with the room by a register at the top to draw off warm air. The air is brought back after humidification through a register in the floor beneath a radiator; it could be brought out of the wall horizontally, without going beneath the floor, in which case a baffle would be necessary.

This apparatus could probably be used to cool the house and wash the air in summer. Dr. Jennings of the Glen Lake Sanatorium tells me he tried this scheme last summer with three tuberculous patients who had the distressing complication of hay-fever. In two cases the symptoms were relieved and the patients made comfortable. It was presumed that the pollen which caused the hay-fever was washed out of the air.

I do not believe stories to the effect that by properly humidifying the air of a house the coal bill can be reduced.

If you humidify properly, you can reduce the temperature of the house and feel comfortable, but most people will not reduce the temperature. The ordinary temperature standard at my house was 70 degrees F., and the thermostat was kept set for that temperature. When I got proper humidity I lowered the thermostat to 68 without any one knowing it; none of the women members of the household complained, but there was some complaint with the temperature at 70 without artificial humidity.

Any saving made by adopting a lower temperature standard will ordinarily be offset by the heat required to evaporate the considerable quantity of water needed to humidify a house. If you do not lower the room temperature, humidification will cost something extra.

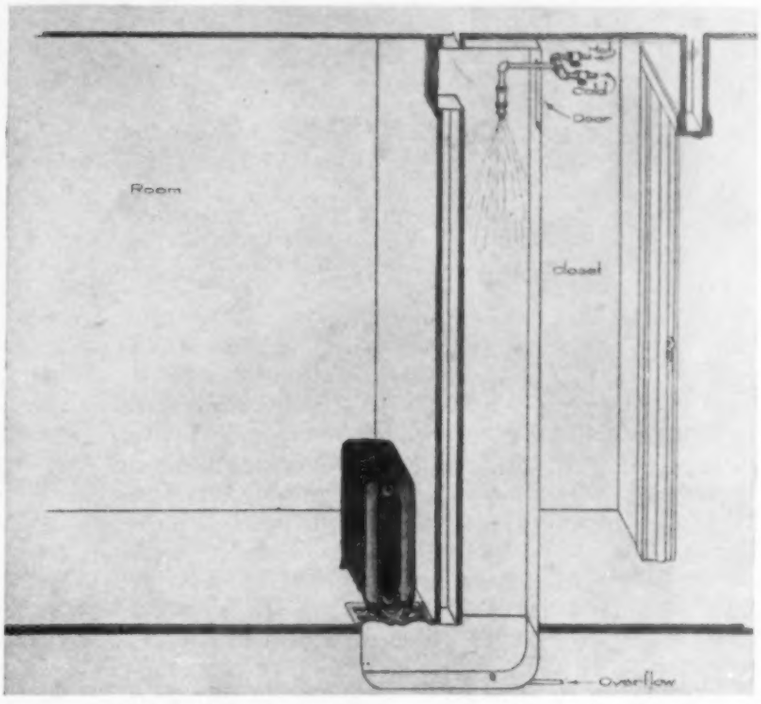


Figure 3.—Spray type concealed in a closet

Engineers measure heat by the B.T.U. (British Thermal Unit), which is the amount of heat required to raise the temperature of a pound of water one degree F. Some readers may wish to compare this with the metric unit, the calory, which is talked of in connection with the heat or energy value of foods. The greater calory is the heat required to raise the temperature of a kilogram of water one degree C. The two units are interchangeable; one greater calory equals nearly 4 B.T.U. The greater calory is equal to 1,000 lesser calories; the large calory is the unit used in calculating the fuel value of foods.

The heat value of fuels is known, just as the heat value of foods is known; if one knew the efficiency of his heating apparatus, the cost per effective B.T.U. and the cost of humidification could be calculated.

I have an oil burning furnace. The heat value of the distillate used is about 19,000 B.T.U. per pound. If we assume that the furnace is 75 per cent efficient (some heat, of course, goes up the chimney), I get about 14,000 B.T.U. of useful heat for each pound of oil. To evaporate a pound of water takes about 1,100 B.T.U. To evaporate a gallon of water (8.3 pounds) takes about 9,000 B.T.U. So, it will take about 13 pounds, or 2 gallons of oil to evaporate 20 gallons of water. At the current price of fuel oil in Minneapolis (eight and one half cents a gallon), the daily expense would be 17 cents. This estimate is based on the assumption that the temperature of the house is kept the same, say 70 degrees, with or without humidification.

Since I have installed humidifiers, I turn off the humidifiers at night and keep the temperature of the house, in day time, lower than I did without humidity. Both of these measures help to lower the cost. Therefore, I estimate that the humidity in my house costs about 10 cents a day; this is insignificant in comparison with the benefits and comfort obtained.

Every year many eyes are lost as a result of preventable accidents. Parents should know how to instruct their children to avoid eye injuries. Scissors, knives, table forks, air guns and jack-knives are but a few of the dangerous articles that children play with. DR. ARTHUR J. BEDELL discusses this problem of eye injuries in an article: "PROTECT YOUR CHILDREN'S EYES." This article will be a part of the February issue of HYGEIA.

I Reduce

—A New Department Created for the Would-Be-Thin Readers of HYGEIA

Should I Reduce?

WEIGHT reduction, in a proper hygienic sense, means reducing the amount of fat in the body. Every person who is carrying excess fat should reduce it to normal. There is abundant proof in life insurance statistics, and in general medical experience regarding diabetes, "fatty" heart and various other diseases, that surplus fat is dangerous and shortens life. Many obese persons can testify that the extra fat is uncomfortable, and as a rule they are inferior in physical endurance to normal persons of similar type. In extreme cases, there is no difficulty in recognizing the superfluity of fat and the need of reduction. A group of borderline cases offers some doubts. Scientific medicine might be expected to furnish some means of deciding what is normal and what is abnormal, but unfortunately no accurate criterion exists. The best average standard is found in the tables of weight and height compiled by the life insurance companies, but these are subject to exceptions.

Different forms of supernormal weight may be recognized as follows:

1. Persons of average build and normal health, who put on excess fat merely because they eat too much or exercise too little. Here the condition is obvious, from the appearance or from comparison with height-weight tables, and as a rule it is easily corrected by reducing diet or increasing exercise.

2. Persons who are obese because of a special tendency to lay on fat. Some of these are abnormal in other respects, on account of deficiency of the thyroid or disease of other glands of internal secretion. Other persons are in flourishing health, except for their unusual readiness (sometimes a family characteristic) to deposit fat. Such cases as a rule are easily recognized, but reduction may be peculiarly difficult and require special medical supervision and considerable fortitude on the part of the person wishing to reduce. Such people may at least find comfort in the fact that obesity is not necessarily synonymous with either laziness or gluttony.

3. Persons with unusually small bones and muscles, who may be obese even if they are within the figures of the standard height-weight tables. The relative excess of fat is generally recognizable by examination, and by the history that the person was formerly slender but has gained weight with age or with changed habits. Such obesity may belong under either form (1) or (2) above, and should be reduced.

All excuses against reducing will be brushed away when one figures facing public gaze in the kind of bathing suits now worn

4. Persons with unusually broad frames, heavy bones and massive muscles, who may appear fat (especially in ordinary clothes) and also exceed the average height-weight figures, but who do not actually carry surplus adipose tissue and hence should not try to reduce.

5. Persons who, in addition to the stocky or squat build just mentioned, tend strongly to carry more than the average amount of fat. There is apt to be an unusual thickness of adipose tissue fairly uniform over the limbs and all other parts of the body. There is some reason to believe that this is not an overload of the ordinary connective tissue with fat, but rather a primary adipose tissue developed in embryonic life as part of the natural make-up of this individual. Such persons commonly have excellent health, strength and endurance, and often feel worse when they try to hold a lower weight. It is therefore a question whether, or to what extent, they should attempt to reduce. It should be remembered that persons of this build can develop ordinary obesity in addition.

Therefore, in the absence of any accurate standard, the general advice can be given that a person should reduce to the weight at which he feels and looks best. This does not have reference to incorrect methods of reducing, or to the temporary discomforts during the process of reduction. Men and women whose obesity is excessive, dangerous, and due solely to laziness and gluttony, are often the ones who complain most of hunger and weakness while their vicious habits are being corrected and their weight

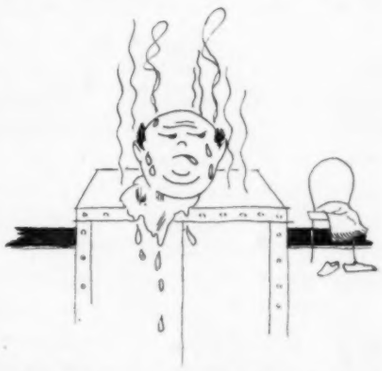
brought to normal. Ultimately they realize the benefit.

Wrong ideas, which rank obesity as a sign of prosperity in men and a quality of beauty in women, now have but little prevalence in this country. Women's fashions are a powerful ally in the campaign for normal figures. The prospect of facing public gaze in the kind of bathing suit now worn by both sexes will brush away many denials and excuses with reference to the need for reducing. Exceptions to standard rules are real, though not numerous, and it is necessary to use common sense and avoid extremes. Nevertheless, in the great majority of instances when a person begins to take thought and ponder the question, "Should I reduce?" the answer is plainly and emphatically, "Yes."

How Can I Reduce?

THE first step in reducing weight is to comprehend the problem of weight reduction. The purpose is to diminish the quantity of fat in the body. Automatically, many of the most popularly employed methods go into the discard as fakes.

1. Sweating does not remove any appreciable quantity of fat from the body, nor can water or anything else bring it out through the skin. Therefore vapor, Turkish and all other kinds of baths are useless. They remove only water through the pores, therefore any reduction shown by the scales is temporary and fallacious.



Vapor and Turkish baths are useless methods for reducing.

2. Rubber garments may squeeze the figure to make it appear thinner but they do not remove any fat.

3. Massage can remove fat only so far as it serves as exercise. The trained masseur can give such exercise, and the rollers and other devices sold in drug stores may fool women into taking a kind of calisthenics, but fat is not rubbed away and the total result of such exercises is generally slight.

4. Medicines, for either internal or external application, are useless for removing fat; the sole exception to this is thyroid, which is dangerous and should positively never be used except as a treatment of definite disease under competent medical advice. Cathartics, especially salts, may cause a deceptive loss of weight according to the scales, merely by emptying the bowel and also withdrawing some water from the body; they do not prevent the absorption of food or the formation of fat. Secret nostrums which are advertised to reduce weight usually contain either thyroid* or cathartics; in general, they are pure quackery and any success achieved is due to an accompanying diet list.

Exercise is a useful aid in reducing, but do not punish yourself by exercising in excessively heavy clothing.

It must be understood that the bodily machine operates according to the laws of energy. The food that is absorbed is literally burned to furnish heat and energy. When food is taken in excess of the requirement, the surplus is deposited as fat. The fat can be removed only by reversing the process, namely, by burning more food than is taken in. This result can be accomplished in only two ways. One way is to increase the combustion of food, and for practical purposes this means increased exercise. The other way is to reduce the fuel value of the diet so that the body is forced to supply part of its needs by utilizing the stored fat.

Exercise

Like any other machine, the body uses up more fuel when it is required to do more work. Exercise is always a useful aid in reducing the body fat, unless the person is thereby stimulated to eat a further surplus above the requirements. The following points should be borne in mind:

1. Prize fighters, baseball players and other athletes are commonly able to take enough exercise to remove surplus fat without any attention to reduction of diet. Some other persons, generally those who are strongly muscled and only moderately overweight, are likewise able to reduce merely by increasing their exercise.

2. It is not feasible for the majority of obese persons to reduce by exercise alone. This is true in an extreme degree for a certain group who are weak muscled, incapacitated by disease or otherwise, or physically lazy. Such persons often receive massage, and in particular they are subjected to involuntary exercise by electrical machines. Many of them think that a sanatorium which undertakes to reduce obesity must be equipped with these devices and also with hydrotherapy. In actual fact such measures for reducing fat are cumbersome, expen-

sive, and mostly unsuccessful. The circulation is stimulated, but not as healthfully as by simple walks and voluntary exercises in the fresh air. Exercise beyond the physical strength is unnecessary and unwise. Any one who is too lazy to take a moderate amount of voluntary exercise will probably not stay reduced long by the use of the involuntary methods. The weight of invalids can be controlled by diet alone, so that they require no massage unless to stimulate circulation and muscular tone.

3. To some extent, fat deposits in particular regions of the body can be reduced by exercise and development of the muscles of those regions. Mainly, however, it is necessary to reduce the total body weight in order to reduce local deposits. The asymmetrical development of adipose tissue in local areas is a tribulation of some men and women, which may be difficult to overcome. Fortunately, in the majority fat is lost mostly from the regions where it is most excessive, so that reduction to a normal weight restores a normal figure.

4. To punish one's self with the wearing of excessively heavy or impermeable clothing while exercising is useless. The perspiration causes only a deceptive loss of weight due to loss of water, not of fat. Exercise should be comfortable, enjoyable and sensible.

Diet

Diet is by long odds the most important factor in reducing.

The most fattening foods are fats, carbohydrates (starches and sugars), and alcohol. The least fattening kind of food is protein—lean meat, fish, fowl, eggs, cheese, gelatin. Protein is also the most necessary food, and the most strengthening when the total diet must be low. Green vegetables and the lighter kinds of fruit supply bulk, vitamines and laxative qualities with relatively low food value.

The average person who is slightly overweight can reduce by moderately restricting the fats (butter, oil, fat meat, bacon), starches (bread, cereals, potatoes, macaroni), and sugars (cane sugar, syrup, honey, desserts, candy) in his diet. Almost any obese person can reduce by following a diet of lean meat and other proteins, green vegetables, and such fruits as are not too high in starch and sugar. Exceptional cases, in which the obesity is too stubborn to be reduced by these simple measures, require direct supervision by a physician or specialist.

Water is not fattening, neither does it influence digestion or other bodily processes so as to govern obesity. Prohibition of water is effective only as an indirect means of making a person eat less food. Many people are surprised to learn that the current ideas about water are a mere superstition and that they may drink all the water they please while reducing.

Cravings for candy and rich foods must be broken, if one means to reduce.

Various substitutes and "fillers" can be used to aid in satisfying hunger. In place of bread, bran muffins or some kind of protein bread (casein or gluten) can be eaten, with soup instead of butter. Whole wheat, rye or black bread and pumpernickel are practically as fattening as white bread, and the same is true of toast. Mineral oil can be used as a salad dressing or in cooking to give the taste of fat without its fattening properties. Saccharin as a sweetening material in place of sugar is familiar. Recipes for agar jelly and other additions to the diet can be found in diabetic textbooks.

Care and moderation should rule in everything. For example, the eating of huge quantities of protein in meat, bread substitutes and other forms has been known as a means of reducing, but such a burden on the kidneys is inadvisable as a rule and might be serious for a person with kidney disease.

Fasting is an unwise means of reducing. It is unnecessarily weakening because of the lack of protein. In a few persons there is a chance of the development of a significant acidosis because of the lack of carbohydrate. The result is usually failure because the fasting cannot be continued long enough, and the person after the fast is apt to eat so much that the excessive weight is restored.

For these same reasons onesided diets of fruit or milk should be avoided.

After the weight has been reduced to the desired point by rational methods, the luxurious and fattening foods can gradually be added in such quantities as will maintain equilibrium, halting any further loss and also preventing the regaining of weight. One result of a proper treatment should be an education in diet and the forming of new habits, so that the individual has little temptation to resume his former wrong ways of eating and living.

Points to Emphasize

Notwithstanding some doubtful borderline cases, there is no doubt that marked obesity is abnormal and harmful.

Obesity can be controlled; those who think they are unable to reduce merely prove that they have used wrong methods.

Contrary to some widespread ideas, the reduction of obesity by correct methods is not harmful or dangerous.

The reduction of weight can be accomplished without special discomfort, provided the case

is not markedly pathological or the eating habits bad. Normal hunger can be satisfied, but cravings for candy and rich foods must be broken.

The problem of reduction should be stripped of the mystery and hocus-pocus with which it has been invested in the public mind. The common custom of viewing this problem as a weird ritual or a painful ordeal is all wrong. Remember that the fat storage in the body is governed solely by the relation between supply and consumption in every case.

Reduction should be accomplished at home successfully in average cases. With pathological obesity or with any complicating disease, the advice of a physician is needed. If it is found difficult or impossible to succeed at home, go to a suitable institution. The value of institutional care does not consist in baths or apparatus, but in the following: (1) Wrong habits are more easily broken away from home; (2) a skilled dietitian can supply a reducing diet which is also appetizing and satisfying; (3) the more accurate diet accomplishes results in the more difficult cases; (4) the patient gains knowledge of cooking and food values, so that his diet for the rest of his life is usually better than if he had not had the period of institutional instruction.

Letters from Hygeia Readers

To the Editor:—Please send me menus or list of things I must eat and do in order to reduce. I am anxious to lose about 25 pounds and would like to know how to do it. The extra weight is mainly on my hips and abdomen.

R. M., Missouri.

Answer.—This question is answered in the article.

To the Editor:—What is the best way for one to reduce? I am 5 feet, 4 inches tall and weigh 163 pounds. I would like to lose about 20 pounds. I am 28 years old. M. B., California.

Answer.—The article in this issue of HYGEIA will answer the question.

To the Editor:—When I began to diet I weighed 128 pounds; I reduced to 95 pounds. I am 16 years old, 5 feet, 3 inches tall. I was then advised by my doctor to gain weight. I gained and weigh 115 pounds now. Is that right? I gained in proportion, but my bust seemed to develop most of all, and I want to reduce it. Isn't there some sort of alum or something to bathe it in? If I drank vinegar would I keep slim? I don't want to get too fat. Does pure milk chocolate make you fat? P. K., Ohio.

Answer.—General exercise and development of the muscles may make the body more symmetrical. Otherwise the figure must be governed by the total weight. Choose the weight at which you feel best and look best. No medicine or external application will affect fat. Vinegar has no influence on weight; it need not be forbidden, but should not be taken in excess. Milk chocolate is highly fattening.

To the Editor:—I am about 25 pounds overweight, and am anxious to reduce to normal weight. What shall I do? O. V. O., Minnesota.

Answer.—This question is answered in the article.

To the Editor:—I am 36 years old, 5 feet, 10 inches tall and weigh 219 pounds. My weight is mostly in the thighs and bust. I have tried dieting. I get thin in the face, and as weak as a cat. I have a lump in my throat, near the thyroid gland. It is not noticeable but it is there; I suppose it is a goiter. It doesn't bother me, but the lump has been there for 14 years and seems to be getting larger on the inside, not out. I have had two operations, one for the removal of the appendix and one for removal of one ovary. My weight is cumbersome. I have three healthy children; I do all my own work, and eat normally. A friend claims she got thin on extract of vanilla, 2 teaspoonfuls a day, and a dose of cascara sagrada twice a week. She reduced all right, but did that reduce her? I exercise, but with no success. I do not like to take drugs. M. E. P., Michigan.

Answer.—This woman has thyroid trouble or some other pathological condition which requires direct advice by a physician. The weight may be peculiar on this account, or possibly the unsatisfactory results of reducing have been due to wrong methods. Vanilla extract or cascara sagrada will not reduce weight unless by impairing appetite or digestion. Avoid drugs unless prescribed by a physician for a definite condition.

To the Editor:—I am glad the department is formed because I think false impressions have been given as to the desirability of reducing for health. Insurance companies have found that certain types of persons are much better risks than others, but I do not believe it follows that all persons can be made into those best types. Age and height are not all that must be considered—ancestry and build count heavily. Dr. Leonard Wood's chest is about 44 inches and his waist much smaller. My chest is about 39 inches and my waist only about an inch smaller. The chest of another man may be only 34 inches and the waist the same. If all three of these men were the same age and the same height, is it not reasonable to think that all three should weigh the same. I have reduced and I still hold myself within certain limits, but I have not been able to detect any difference in a feeling of well-being between the time when I weigh 145 pounds and the time when I weigh 175 pounds. My people are all stout. If I am wrong please correct me. J. L., North Carolina.

Answer.—This question is covered in the opening discussion.

Letters telling of your attempts to gain a sylphlike figure are answered by medical authorities. Write HYGEIA about your reducing problems.

The Children's Hospital Brings Health

A. J. BOHL

DOWN in Franklin County near the historic Mason and Dixon's line is a wonderful place, the Pennsylvania State Health Department Tuberculosis Sanatorium at Mont Alto. The hospital, the nurses' home, the chapel, the rows of low cottages surrounded by beautiful lawns and shrubbery—all are wonderful. Back of all this is the humanitarian idea of taking care of Pennsylvania's unfortunate tuberculous people, but the children's hospital is the chief feature of the place.

Children have always been taken care of in the sanatoriums, but they did not have their own hospital. Some one conceived the idea and the secretary of health, the deputy secretary and the chief of the sanatorium put the idea across.

After the World War, the state health department and the federal government cooperated in establishing a hospital for veterans who had contracted tuberculosis. Until a year or so ago this building functioned as a veterans' hospital, then it was closed for a while until the department of health undertook the establishment of a preventorium for children.

The main building is long and three stories high, with flat topped solariums at each end. There are porches with vines twining over them, bright beds of flowers, and trees and mountains as far as you can see.

Inside the building everything is clean and shining. Starting at the schoolroom in one of the towers, you can see, as you walk through the corridors, an endless chain of offices, washrooms, examining rooms, and wards with double rows of little white beds, each with a white enameled table for personal belongings. There is a made-to-order room for rainy days. The department built, and the American Legion furnished for the veterans, a big clubroom with a fireplace; it is a fine playroom for basketball and games.

Shouts and laughter draw you to the nearest window. Nearly two hundred children—big, little, white, black, blonde and brunette, and of all nationalities are on the playground. They look like a healthy, robust bunch of youngsters —no signs of tuberculosis there. But the doctors and the nurses know that in those little robust bodies are lesions, small weak spots, that would develop into uncurable tuberculosis if the child remained at home and had no rest cure, no proper food, no sun baths, and no exercise. The little girls run around all day in one piece

Little patients in school at the children's hospital

overalls that cover just about half of the body. Those overalls, plus tennis shoes, are all they need in the summer time. The boys wear trunks and tennis shoes. No one wears a hat at Mont Alto; small wonder that they all are brown as Indians.

This mountain air gives the children a good appetite. There is a cafeteria dining room next to the kitchen, and when it is meal time the small children sit at the tables and the older children find trays. The trays are filled with wholesome hot food and the older children serve the little ones before serving themselves.

Every one at the preventorium is either a patient or an ex-patient. The doctor in charge is an ex-patient, so are the two nurses and the six student nurses. The student nurses are girls who have recovered from tuberculosis and have remained at the sanatorium to take instruction in nursing.

Heliotherapy, or sun cure, is responsible for the dark brown color of the children's skin; it is also responsible for their health. On top of the round towers there is a special place for the sun treatment. Part of the building casts a shadow so that one can lie on the roof with his head in the shade and his body in the sun. The children spread blankets and lie down and the nurse tells them how long to stay in the sun.

This is a back to nature move, and a real cure. The sun cure has been given in the Swiss Alps for years and practical miracles have been performed; the results are just as miraculous on this side of the world.

Deafness Cure Quackery and Pseudo-Medicine

ARTHUR J. CRAMP

THERE are styles in quackery. The prevailing modes of the current season are those products sold for alleged "rejuvenation." The products themselves differ widely in composition, ranging from glandular substance of ringtailed monkeys to radium emanation dissolved in drinking water. But in quackery, as in other well-established branches of human activity, there are certain old standbys that, like Tennyson's Brook, go on forever. Of such are the consumption cures and the cancer cures; the epilepsy cures and the rupture cures; the female weakness cures and the weak men cures; the cures for fatness and the cures for leanness; the quacks who will fit glasses on no other data than your age and ability to pay the bill, and the faker who will sweepingly promise to cure deafness of whatever origin.

Considering its strictly specialized nature, the number of faddists and fakers in the deafness cure field in proportion to the total number of medical empirics is large. Some of them do business through the United States mails; some are itinerant quacks; others dispose of worthless or dangerous preparations through the retail drug stores. The mail-order quacks may be divided into two classes: (1) those who sell a more or less elaborate but worthless "course of treatment" and (2) those, probably in the majority, who dispose of trivial, worthless and often dangerous devices at exorbitant prices. For the purposes of this paper the field has been arbitrarily divided into three groups: medicinal preparations, mechanical devices and practitioners.

Medicinal Preparations

One of the most widely advertised deafness cures of the medicinal type is *Leonard's Ear Oil,* exploited by A. O. Leonard of New York City. A collection of Leonard's series of follow-up letters show them to be of the usual medical mail-order type with stock testimonials, "bulletins" and other paraphernalia of the long distance quack. It seems that Leonard, like practically all charlatans who do business through the mails, has, in the past at least, sold the original letters he received from victims and prospective victims. Such letters, by the hundred, have been offered for sale and rent by professional letter brokers.

Look for this Sign in
Drug Store
Windows.
It is a
LEONARD
EAR OIL
AGENCY
If your druggist is not an agent write me, 150 5th Ave., Suite 816, New York City, for descriptive circular and list of New York, Brooklyn and N. J. druggists who are agencies for Leonard Ear Oil. NO OIL SOLD BY ME AT RETAIL.

Leonard's Ear Oil has been sold not only on the mail-order plan but also through the retail drug trade, for, unfortunately, some druggists are not above participating in the profits of medical fakery. A few years ago the department of health of the city of New York analyzed Leonard's Ear Oil and reported that it was, in effect, an emulsion of mineral oil and soft soap with a little camphor and eucalyptol. Leonard was arrested and found guilty of making false and misleading claims. He was sentenced to pay a fine of $250 or go to jail. At the same time the New York Health Department notified the druggists of that city that the continued sale of Leonard's Ear Oil would make them liable to prosecution.

Later, Cleveland, Ohio, through its commissioner of health, declared Leonard's Ear Oil a misbranded product, and notified the druggists of Cleveland to discontinue the sale of the preparation. Still later, the federal authorities seized a quantity of the Leonard's Ear Oil, charging that the claim that the stuff was an effective remedy for the cure of deafness was false and fraudulent since the preparation contained no ingredient or combination of ingredients capable of producing the effects claimed. The court pronounced judgment of condemnation and forfeiture and ordered the product to be destroyed. At the present time Leonard is advertising some ear drums and in connection with them exploits his oil.

Aurine Ear Balsam, another "deafness cure" of the medicinal type, is put out by the Aurine Remedy Company, Chicago. A few drops of Aurine Ear Balsam, it is claimed, will cause deafness of catarrhal origin to disappear. When there is a discharge from the ears the daily use of Aurine Ear Balsam is said to stop the discharge. If we believe the advertising, the deafness of old age can also be remedied by Aurine Ear Balsam. According to the Aurine school of otology, head noises are caused by mucus that holds the small bones in the ear in one place;

Happy Letters Tell Wonders
Aurine Ear Balsam is Doing
Here are a few letters telling of the wonderful results people have obtained from using Aurine Ear Balsam. — They are happy letters from happy people. Send for your bottle of Aurine today and I am sure you too will write a letter telling how happy you are that Aurine Ear Balsam helped you.
AURINE
EAR BALSAM
DIRECTIONS
HEAD PAINS HAVE CEASED.
Hoboken, N. J., Aug. 6, 1924.
Dear Sir: — Please send me another bottle of your Aurine Ear Balsam at an early date, as I have only a small amount on hand. I have been greatly benefited with what I have already used, and I feel with its continued use it will do all you claim for it. The head pains that I have suffered for so long ceased altogether and my hearing has improved to some extent, which is more than I had hoped for as my case is one of many years standing. I hope to have more good news for you in the next letter. You may send it C. O. D. as you did the last bottle.
Respectfully,
Mr. JOHN ROBERTS.
MARVELOUS RESULTS.
Los Angeles, Calif., Sept. 15, 1924
Dear Sir: — I have two friends who suffer with ear trouble and I am anxious for you to send them some of your literature. I received marvelous results from your Ear Balsam and want these friends to try it. I will also write them personally about it. I have only used the balsam since March and seem to have completely overcome my trouble. — Yours truly,
Mrs. F. W. ROBESON.
WONDERFUL.
Baltimore, Md., Aug. 20, '24.
Dear Sir: — Please send me another bottle of this wonderful Aurine Ear Balsam. I enclose $2.00 for same. — Yours truly,
FRANK GORBI.
RECOMMENDS AURINE TO ALL
Johnstown, Pa., Aug. 21, 1924
Dear Sir: — I am enclosing two dollars for another bottle of Aurine Ear Balsam. I will say it has done wonders for me, for I have suffered with roaring in my ears for four years, and will recommend it to any one suffering with ear trouble. — Yours truly,
Mrs. LYDIA LANE.
ONE BOTTLE HELPED
Thurber, Tex., Aug. 6, 1924
Dear Sir: — Please send me by the next mail another bottle of your Aurine Ear medicine. I have used one bottle already and find it to be helping me. We will pay the postman as you said in your letter.
Sincerely yours,
Mr. CARL ROBERTS

A piece of deafness cure quackery from Chicago

Aurine loosens the mucus and the head noises stop! We are told that thickened, relaxed or sunken drums are due to the eustachian tubes becoming stuffed with mucus, and that a few drops of the "balsam" will soon restore the drums to their natural condition.

The chief stock in trade of the Aurine concern is testimonials which would impress on the sufferer the idea that Aurine Ear Balsam will cure deafness and other ear troubles. Prospective victims are urged to send in $2 for a package. Those who bite get an ounce of oil—the "balsam"—an elongated tooth pick with a pledget of cotton on one end, a medicine dropper, and a small wad of absorbent cotton. They are told to instil three or four drops of the Aurine Ear Balsam into each affected ear once a day, and to clean the external opening every other morning with the wooden swab. In cases of discharging ears the victim is told to mix five drops of Aurine Ear Balsam with four tablespoonfuls of warm water and inject it into the ear with the glass dropper every other day. The victim is urged: "Stick to Aurine Ear Balsam and get rid of your trouble."

A preliminary examination of Aurine Ear Balsam was made in the chemical laboratory of the American Medical Association and the chemists reported that the product appears to consist largely of glycerin with boric acid, aromatic oils and what apparently is a local anesthetic.

Virex
COMPOUND
This Famous TEST
Proves the Penetrating Power
VIREX Quickly Reaches the Seat of Ear Troubles.
The Ear Is the Most Delicate and Intricate Mechanism In the Body
USE ONLY VIREX FOR EAR TROUBLES
THE DALE LABORATORIES, Kansas City, Mo.

Virex is marketed by quacks who have a number of medical mail-order fakes.

Hearwell Oil is another deafness cure nostrum of fairly wide distribution; it is put out by a Milwaukee concern. With the oil there also comes some tablets to be used as a supplementary treatment. When subjected to preliminary tests in the American Medical Association's laboratory, the chemists reported that apparently Hearwell Oil is crude Japanese camphor oil, a by-product in the manufacture of camphor; the tablets are sodium iodid in an excipient of elm bark.

Virex is a widely advertised mail-order fake put on the market by the Dale Laboratories of Kansas City, Mo. The same quacks that conduct the Dale Laboratories also have a number of other pieces of mail-order quackery sold under as many different company names. Virex was originally called "Rattlesnake Oil." There have been a number of so-called rattlesnake oils on the market, and none of them has ever been found to contain even a trace of snake oil—not that it would mean anything if they had. One of the rattlesnake oils analyzed in the American Medical Association's laboratory was found to consist of oil of turpentine with small quantities of camphor, menthol and sassafras.

Mechanical Devices

Among the mechanical devices sold as cures for deafness the "ear drum" type is most common and there are three or four which for some years have been extensively advertised. The *Wilson Ear Drum*, according to its ex-

ploiter, is a wireless telephone for the ears. Further:

> "It is the only device in the world that collects sound waves and focuses them to one point."
>
> "It is the only device in the world constructed on scientific principles."
>
> "It is the only device in the world that is made to fit the orifice of the ear."
>
> "It is the only device in the world that cannot possibly injure the hearing."

The Wilson Ear Drum is generally sold on the mail-order plan, although it has also been peddled over the country. It is a small rubber contrivance made to slip into the external auditory canal and sells for $5 a pair, with a nickel forceps and a drum inserter thrown in. Needless to say the device has been granted a patent. Needless to say, too, it will never cure a case of deafness.

The *Way Ear Drum* is another extensively exploited ear drum device—patented, of course—sold through the mails by George P. Way of

I Was Deaf 25 Years
I CAN NOW HEAR
with these soft, pliable artificial ear drums. I wear them in my ears night and day. They are perfectly comfortable. No one sees them in my ears. Write me and I will tell you a true story,—how I got deaf and how I made myself hear.
Medicated Ear Drum
Pat. Nov. 3, 1908
No. 902785
ARTIFICIAL EAR DRUM COMPANY
Address GEO. P. WAY, Manager
G. P. WAY 41 Adelaide Street Detroit, Mich.

Detroit. We have been asked to believe that these little rubber drums have enabled a man who was so deaf that he could not hear thunder to hear a clock tick 30 feet away. The distance of the thunder and the size of the clock were not specified. Way claims to have cured himself of twenty-five years' deafness by means of his drums. His sales method has been to offer the ear drums for $5 a pair and to those who hesitate promise that if they purchase they will receive in addition a unique instrument which he has christened "Blowena," a "catarrh cure" side line. Way calls his device a "medicated ear drum," as medicament is used in the device. In the older advertising Way claimed that he was the discoverer, inventor and patentee, although the patent specifications show that it is really the invention of Frances M. Way, his wife. She is the F. M. Way, described as the "well-known specialist" connected with the Way organization.

The *Morley Invisible Ear-Phone* is also widely advertised—and patented. It is put on the market by the Morley Company of Philadelphia. The thing is sold through the mails and the company, in the past at least, seems to have disposed of the letters it received from the deaf, as letter brokers have offered more than 17,000 Morley letters for sale and rent.

Unlike the rubber contrivances of Way and Wilson the Morley Invisible Ear-Phone is a small disk of oiled silk about one-quarter inch in diameter, through the center of which is a piece of silk thread. With a spool of silk thread and 10 cents' worth of oiled silk, anybody old enough to use a pair of scissors could make a hundred artificial ear drums that would be just as effective and just as potentially dangerous in the hands of the unskilled as the Morley phone. One hundred for 25 cents! The Morley phone sells for $5. The Morley Invisible Ear-Phone is in fact nothing but the old Toynbee artificial drum-head made of oiled silk instead of rubber, as was the original. Toynbee constructed his artificial membrane in 1852, and made it of rubber. Fifty years later the Morley concern applied for a patent on essentially the same thing made of oiled silk, and the United States granted a patent on it as a new and useful improvement in artificial ear drums!

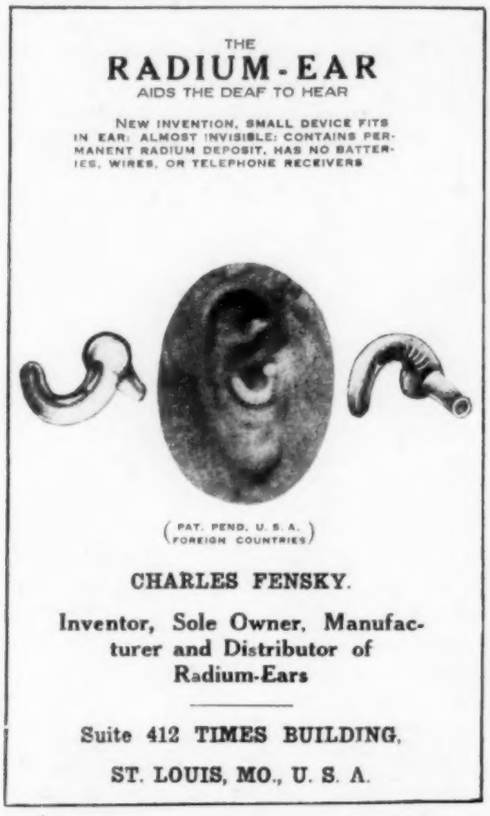
Also from Philadelphia comes the *Mega-Ear-Phone,* which seems to be exploited by one Edward Baum, M.D. This is sonorously described as an invisible, multiple, sound-accumulating, megaphonic augmentator and cornucopial accumulator. It is, we are told, the "latest and most effective device for the relief of impaired hearing of any degree." The inevitable patent was granted in 1916. The Mega-Ear-Phone outfit consists of six pairs of Mega-Ear-Phones, made of oiled silk, a small hard rubber tube, split at one end, to be used in inserting the device, a small bottle of oil, a

DEAFNESS
THE MEGA-EAR-PHONE
A Comfortable Invisible Ear Device permanently relieves CATARRHAL DEAFNESS. Stops Head Noises. Makes words more plainly understood. Takes the place of Perforated, Punctured, Ruptured or Destroyed Natural Ear Drums, giving IMMEDIATE results. The scientific triumph that has benefited thousands. Helps nature restore hearing when other efforts have failed. The Mega-Ear-Phone WILL HELP YOU. Illustrated Descriptive Booklet on request.
THE MEGA-EAR-PHONE, Dept. K-2,
407 Otis Bldg., 16th & Sansom Sts., Phila., Pa.

rubber ear syringe, a few wooden applicators, a small wad of cotton and a pair of tweezers. The outfit sells for $10. As a cure for deafness it is not worth 10 cents.

The *Radium Ear* or *Audiphone,* put out by one Charles Fensky of St. Louis, is a metal device, having a straight cylinder to fit the ear canal, and a curved portion that hugs the outer ear. Its chief element of hokum lies not, however, in its mechanical structure, but in the claim that the device is radioactive. Originally

it was said to be charged with "Hearium," an alleged radioactive substance, put out by an individual who has dealt in fake radium. Later, Fensky declared that he had abandoned "Hearium" as an ingredient of the Radium Ear and used instead what was said to be an actual deposit of radium in extremely low dosage! This low dosage "radium," it seems, is furnished by an advertising quack on the Pacific coast. The Radium Ear has no more value as a cure for deafness than the luminous figures on the dial of a dollar watch.


THE
RADIUM-EAR
AIDS THE DEAF TO HEAR
NEW INVENTION, SMALL DEVICE FITS IN EAR; ALMOST INVISIBLE; CONTAINS PERMANENT RADIUM DEPOSIT, HAS NO BATTERIES, WIRES, OR TELEPHONE RECEIVERS
(PAT. PEND. U. S. A. FOREIGN COUNTRIES)
CHARLES FENSKY.
Inventor, Sole Owner, Manufacturer and Distributor of Radium-Ears
Suite 412 TIMES BUILDING,
ST. LOUIS, MO., U. S. A.

The word "radium" is one for quacks to juggle with. The "radium ear" is utterly worthless as a cure for deafness.

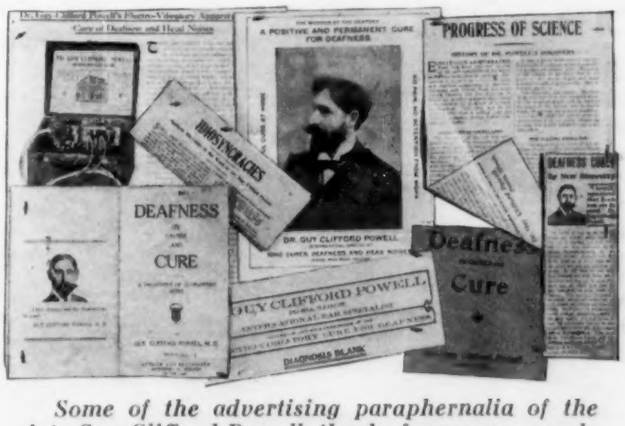
The *Electrophone* is an elaborate and awe-inspiring device exploited from Chicago. It was originally called the "De-a-fone," and was put on the market by a concern that was first known as the National Acoustic Laboratories, later as the National Deafone Company and still later as the Electrophone Corporation. The instrument is being used in a so-called Audio Institute, which advertises: "Hearing restored by the Audio treatment." At one stage of the exploitation of the Electrophone it was claimed that the device had been approved by three well-known aurists. Investigation proved that not one of the three approved it. On the contrary, they expressed opinions ranging, in effect, from the statement that the thing was quackery, to the more conservative but equally damning assertion that it was without value.

Hearing Restored
by the AUDIO Treatment
Our Patients
Furnish the Proof
This is not an "aid to hearing," nor an appliance to be worn in the ear, or on the person. It is a treatment administering a sound-wave vibratory massage so perfectly controlled that persons in all stages of deafness can be made to instantly hear both voice and music.
If the arm is broken and carried in a sling for weeks, when the sling is removed, the arm is useless. Its usefulness is restored by massage and exercise. In the treatment of impaired hearing, we apply the same principle to the ear, introducing a sound-wave vibratory massage and exercise which induce normal hearing.
If the delicate bones and muscles of the middle ear have become rigid, or the functioning of the ear is interfered with, this sound-wave vibratory massage tends to loosen the rigidity, to strengthen the muscles, and induce proper blood circulation to return to these parts, aiding nature in the restoration of a healthy and functioning condition.
If you are deaf, hard of hearing, or troubled with head noises, call and let us give you a private demonstration of the Audio which makes possible the restoration of your hearing to a state of practical usefulness.
AUDIO INSTITUTE, INC.
Suite 1812 Mallers Building, 5 S. Wabash Ave., Chicago
Phone Central 2422. Office Hours: 9 A. M. to 6 P. M. Daily, Except Sunday
Free Demonstration

An advertisement of the Audio Institute, which uses the Electrophone (De-a-fone).

Practitioners

Among practitioners in the field of aural quackery and pseudo-medicine, the late *Guy Clifford Powell* of Peoria, Illinois, immediately comes to mind as one of the best known of the deafness cure quacks of his time. Powell called himself an "International Specialist"; he was, in fact, an international quack, for he advertised on both sides of the Atlantic. His particular piece of buncombe was the "Electro-Vibratory Cure for Deafness." He did business on the mail-order plan, asking $100 in his first letter, but—sliding swiftly through a series of form letters—coming down finally to $15. In due time, Powell was gathered to his fathers.



Some of the advertising paraphernalia of the late Guy Clifford Powell, the deafness cure quack.

His quack business, too valuable an asset to let die, was for a while continued by the *Dr. L. C. Grains Company,* which was virtually owned by an advertising agency. After taking over the Powell factory and moving it from Peoria to Chicago, the L. C. Grains Company was unable to carry on, and the concern lapsed into innocuous desuetude.

SUCCESSFULLY TREATE
tissues waste, stomach and
rform their natural function
n becomes impaired, the kid
s composed of two great sy
cerebro-spinal system, comp
h and spinal cord and the ne
connected with the centers wh
nimal life, and the organic syste
of nerves controlling the or
other words, the actio
the condition
the nerves unstrung and mucous
discharges, gradually destroyi
smell, hearing and memory. M
reaches the different parts of
supplying pure medicated
al passages, bronch

A highly imaginative picture from quack Branaman's booklet showing his "electro-magnetic head cap" in action.

For many years *O. W. Branaman* of Kansas City, Mo., conducted a deafness cure mail-order concern. Branaman had a somewhat elaborate treatment. There was what he called an "electro-magnetic head-cap," which was to be worn by the patient. This was said to produce a current of electricity which it was alleged would revivify the nerves and other structures of the ear. There were also some tablets to be taken before each meal, some ear drops to be used each night, a vaporizer liquid and a liquid for a gargle. The tablets were strychnin; the ear drops contained carbolic acid, glycerin and boric acid. The vaporizer liquid was liquid petrolatum with small quantities of menthol, camphor and thuja oil. The gargle was mostly water with a little glycerin, baking soda, borax and a dash of carbolic acid. Finally the federal authorities got around to him, declared his business a fraud, and debarred him from the use of the United States mails.

George E. Coutant, M.D., of New York City advertised a mail-order cure for deafness. Before taking up the deafness cure faking Coutant had been involved in other forms of quackery even more disreputable. In the first of a long series of follow-up letters on his deafness cure scheme he asked $10 for the treatment. This was reduced by easy stages until in the seventh letter it was offered for $3. The treatment itself consisted of several small boxes of gaily colored pills and tablets, a salve, a nickel-plated inhaler and a nasal douche.

Coutant's Home Treatment for Deafness. Sold for $10, $5, or $3, according to the ease with which the victim bit. Not worth 3 cents.

Coutant, in common with most mail-order quacks, used what he called a "Money Refund Guarantee Certificate"; a careless reading of this "guarantee" led one to believe that in case the patient were not benefited Coutant would return the money. What the "certificate" really did promise was that if three complete treatments were purchased at $10 each the price of the first treatment would be refunded if the patient declared that he had not been benefited.

WANTED! 15,000 SUFFERERS FROM

DEAFNESS

HEAD NOISES

Or Nasal Catarrh

I want the names of 15,000 people who are suffering from cartarrhal deafness, dullness of hearing or head noises. I have an original home treatment for those distressing conditions which I want you to try without cost or expense. I sufferd for many years with catarrh, deafness and head noises, tried many different treatments. Had two surgical operations all of which failed to give permanent relief. I began experimenting on myself and finally found a treatment which completely healed my catarrh, restored my hearing and stopped the terrible head noises. I want you to try this splendid treatment entirely at my own expense.

DR. W. O. COFFEE, Noted Catarrh and Deafness Specialist

15,000 TREATMENTS TO BE GIVEN THIS MONTH FREE!

I am so proud of my treatment and so anxious to help others suffering with deafness, head noises or catarrh that I will have packed and ready for shipment 15,000 demonstration treatments which I will give away in the next 30 days absolutely free. I want to prove that my original home treatment will give relief from catarrhal deafness, head noises or nasal catarrh. The results are quick and convincing. You feel the difference the first day. This treatment costs you nothing whatever. Simply write and say that you are suffering with deafness or head noises or catarrh I will gladly send the free treatment. It is the best treatment I have ever found in over 40 years daily practice as eye, ear, nose and throat specialist. I want every sufferer with deafness, dullness of hearing, head noises or catarrh to try it free.

Don't Neglect Deafness

Catarrhal deafness, head noises and catarrh when neglected gradually grow worse. Authorities cialty that 90% of all deafness is caused primarily by catarrh of the head and air passages. Others state that catarrh causes indigestion, rheumatism, catarrh of the stomach and many other diseased conditions.

Try It Free

I don't ask you to send one penny for this treatment. I send it free to you prepaid without cost. I am doing this to quickly introduce my original home treatment to sufferers of catarrhal deafness, head noises or catarrh. I believe I treat more cases of deafness, head noises and catarrh than any physician in the United States. I know this treatment is the best I have ever used. Send your name and address today. State whether you have deafness or head noises or just have catarrh. This notice may not appear again so write me at once.

DR. W. O. COFFEE, Suite 585 St. James Hotel Bldg., Davenport, Iowa

Coffee frequently uses full-page newspaper advertisements. Here is a reduced reproduction of one of his smaller pieces of self-puffery.

In other words, Coutant played to get at least $20 for something not worth 20 cents.

Dr. W. O. Coffee conducts his mail-order deafness cure from Davenport, Iowa—out where the West begins! Coffee used to have a flourishing business in Des Moines in curing eyes by mail. Samuel Hopkins Adams in his "Great American Fraud" series in *Collier's* devoted some space to Coffee and his methods. This unfavorable publicity caused Coffee's mail-order eye business to wane and in 1915 the Des Moines newspapers recorded the fact that Coffee, although living in a $100,000 house, had gone into voluntary bankruptcy.

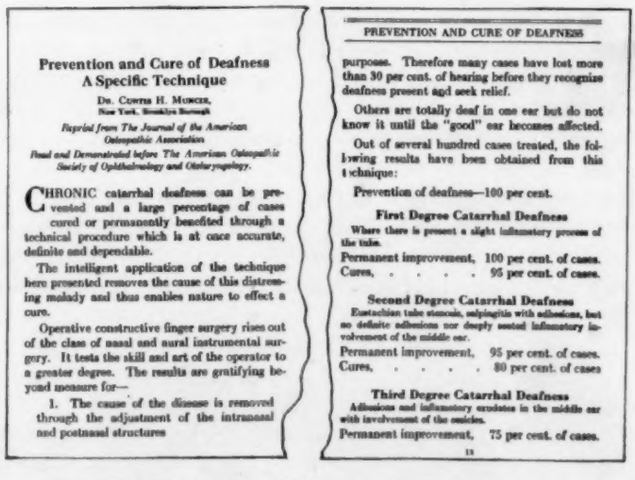
Coffee then became an itinerant and moved his headquarters from Des Moines to Davenport. Gradually from "curing" eyes he switched over to "curing" deafness. Still more recently he has abandoned the itinerant field and has gone back to the easier and doubtless equally lucrative branch of mail-order quackery, still, however, as an aurist.

A paper on pseudo-medicine in the aural field would not be complete without reference to *Curtis H. Muncie,* the Brooklyn osteopath, who claims to be curing deafness by means of what he calls "operative constructive finger surgery." More than five years ago a newspaper service that furnishes sensational features for certain Sunday newspapers, dished up a full-page article dealing with the alleged cure of the congenital deafness of young Prince Don Jaime, second son of the king of Spain. Investigation showed, of course, that the story was a pure fabrication. Then in the summer of 1923, papers in various parts of the country carried a story to the effect that Muncie had been called to Europe to treat Prince Don Jaime for his deafness. One New York paper reported that Muncie by his manipulations had cured the prince of his ailment and had declared that the lad's deafness was due to "a state of complete deformity" of the eustachian tubes. Muncie's treatment was simply that of "reconstructing the eustachian tubes"—a mere bagatelle for an osteopath! The yarn was a readable one and its advertising value to Muncie must have been worth a king's ransom. Investigation proved that Prince Don Jaime was still deaf and had undergone no such treatment as that reported.

On Muncie's return from Europe, he announced that the earlier report was not altogether accurate; that while it was perfectly true that he had gone to Europe to operate on a prince, it was not Prince Don Jaime. Who it was he would not divulge. The newspapers carrying this correction quoted Muncie as having said that after a twenty-minute operation the prince on whom he did operate had practically normal hearing.

According to Muncie's advertising booklet, he obtains the following results from his methods of treating deafness: In the prevention of deafness, 100 per cent success. In what he calls first degree catarrhal deafness he produces permanent improvement in 100 per cent and cures in 95 per cent. In second degree catarrhal deafness he produces permanent improvement in 95 per cent and cures in 80 per cent. In cases of deafness in which there are adhesions and inflammatory exudates in the middle ear with involvement of the ossicles, he gets improvement in 75 per cent. The same booklet describes his technic. With the patient under nitrous oxid (gas) anesthesia he "normalizes and reconstructs" the eustachian tubes, "adjusts" the nasal tissues, turbinates and septa and with his finger "feels adenoids, pus-pockets and adhesions and removes them." Then the patient "comes back from a pleasant sleep with a reconstructed nasal and nasopharyngeal area." His fees, according to a letter that we have on file, are: examination $25, operation $200 and up with postoperative treatments, two a week for six months, at $10 each.

The scope of aural quackery and pseudo-medicine is so broad, and the number of fads, faddists, fakes and fakers in the field so great that a book might be written on the subject. This form of quackery like all other forms will continue to flourish just so long as public credulity obtains, for, to paraphrase Voltaire, the quack was born when the first knave met the first ignoramus. It is lack of knowledge and



Prevention and Cure of Deafness
A Specific Technique

Dr. Curtis H. Muncie,
New York, Brooklyn Borough

Reprint from The Journal of the American Osteopathic Association

Read and Demonstrated before The American Osteopathic Society of Ophthalmology and Otolaryngology.

CHRONIC catarrhal deafness can be prevented and a large percentage of cases cured or permanently benefited through a technical procedure which is at once accurate, definite and dependable.

The intelligent application of the technique here presented removes the cause of this distressing malady and thus enables nature to effect a cure.

Operative constructive finger surgery rises out of the class of nasal and aural instrumental surgery. It tests the skill and art of the operator to a greater degree. The results are gratifying beyond measure for—

1. The cause of the disease is removed through the adjustment of the intranasal and postnasal structures

PREVENTION AND CURE OF DEAFNESS

purposes. Therefore many cases have lost more than 30 per cent. of hearing before they recognize deafness present and seek relief.

Others are totally deaf in one ear but do not know it until the "good" ear becomes affected.

Out of several hundred cases treated, the following results have been obtained from this technique:

Prevention of deafness—100 per cent.

First Degree Catarrhal Deafness

Where there is present a slight inflamatory process of the tube.

Permanent improvement, 100 per cent. of cases.
Cures, ... 95 per cent. of cases.

Second Degree Catarrhal Deafness

Eustachian tube stenosis, salpingitis with adhesions, but no definite adhesions nor deeply seated inflamatory involvement of the middle ear.

Permanent improvement, 95 per cent. of cases.
Cures, ... 80 per cent. of cases

Third Degree Catarrhal Deafness

Adhesions and inflamatory exudates in the middle ear with involvement of the ossicles.

Permanent improvement, 75 per cent. of cases.

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Reproduction in miniature of pages of one of osteopath Muncie's booklets telling how he cures deafness.

not a dearth of brains that breeds credulity. The best that the medical profession can do in protecting the public is to turn the light on the methods of the quack and the faddist so that his sordidness or ignorance becomes apparent. In this way the layman can acquire a certain degree of critical judgment that will make him a less easy prey for the medical shark.

Small Town and Rural Problems of Physical Education

How the Classroom Teacher Helps to Solve the Problems

G. C. THRONER

WITHIN the last eight years a novel situation regarding physical education has arisen in the United States. During this time, the physical education of future citizens has become the obligation of thirty-three states. This represents the first attempt at state programs of physical education on the western continent.

Immediately after the war, surveys were conducted by state departments of education and by state boards of health to ascertain the physical condition of school children. The reports of these surveys agreed with the alarming physical condition found among the young men who had presented themselves for military service. As a consequence of these investigations, the legislatures of the various states were importuned to enact laws to better the physical condition and general health of their future citizens.

This is how physical education as a state program was established in practically all of the commonwealths. The possible exception to this is that a greater desire for physical fitness for military service may have been in evidence in the enactments before 1920.

Teaching Healthful Living

This idea of physical fitness and health is representative of the objective of physical education in the minds of the legislators and the people in practically all of the thirty-three states —states which now have statutory physical education. In the administration of physical education, educators must keep this factor in mind.

Whether physical education should exist "for the development of the fundamental intellectual, emotional, nervous and organic powers underlying efficiency in life," or whether physical education should exist for the idea of physical fitness for military exigencies is beside the point. The pertinent fact remains that educators in practically three fourths of the states of the Union must take due cognizance of the health and physical aims and values of physical education and administer their programs accordingly. In other words, educators, in addition to planning a state program of physical education for the educational values of the motor activities, are compelled to place as much emphasis on the factors of health control of pupils, and on the teaching of healthful living that will actually function in the everyday lives of the children to conform with the popular opinion of physical education and often in direct compliance with the wording and intent of the law. This emphasis on health, health control of pupils, and physical fitness presents special problems of administering a state program of physical education which would recognize these health factors as phases of the program.

In large cities, the administration of these various phases of the program would be entrusted to physical educators, nurses, and doctors, but such a division of labor is impractical for administrative reasons and economically impossible for rural districts. On the other hand, the necessity for an enlarged program of physical education for rural districts to include

the above phases is paramount. What, then, shall constitute a comprehensive program of physical education for small towns?

Surveys show that country children have a higher percentage of remedial physical defects than those of cities, hence the need of periodic and annual physical examinations. The daily health supervision of country pupils is meager, negligible, or lacking, owing to the dearth or absence of school nurses and physicians and to inattention to preventive measures for the spray borne diseases of childhood. The pupils of the rural districts, in contrast to their brothers and sisters in cities, attend schools in which the environmental factors are not so carefully regulated, owing to less efficient systems of heating, ventilating, and plumbing. These factors show the necessity for daily physical inspection as another phase of the program of physical education.

There is need for the teaching of health principles of personal and public hygiene or healthful living in all programs of physical education, and especially so for rural districts, where attention to ventilating, heating, sewage disposal, and water supply is apt to be negligible or lacking.

The state program for the rural districts must contain the physical activities, which are likely to be totally disregarded because of the lack of appreciation of them outside of urban centers. Parents are likely to insist that play and other physical activities are a waste of time, and unnecessary. They contend that the children get plenty of exercise; they have no conception of that phase of education which employs the physical as the means to the end.

A Logical Program of Physical Education

The program of physical education should, then, consist of the following phases:

1. The annual physical examinations or physical inspection of school children in order to ascertain the common physical defects detrimental to health, growth, and development. This should include the weighing, measuring for height, and comparison of results with standard charts for determining underweight; testing for vision with the Snellen eye chart; testing for hearing with the conversational voice; inspection of teeth and skin and observation of mouth breathing.

2. The daily physical inspection of pupils for the detection of early symptoms of illness and for the observation and encouragement of personal health habits. Daily inspection should include the supervision of heating, ventilating, lighting, water supply, and cleanliness of the building.

3. The teaching of health habits and public hygiene that will function as basic factors of healthful living in the everyday life of the child at school and at home.

4. A program of physical activities that has as its function an education physically and mentally and that stresses the improvement of the functions and scopes of all the special senses of the body. In addition, the program of physical activities contributes standards of personal and group conduct in wholesome social situations in the gymnasium, on the playground and athletic field; these are vital factors to the education of rural children.

Who Shall Administer the Program?

How can a program of physical education for the small towns and country districts be administered, if the services of the physical educator, nurse, and doctor are unable to be utilized in the greater number of states? On the classroom teacher rests the responsibility for administering the program in all of the states that are obligated to the physical education of the children.

Should the classroom teacher be responsible for a program of physical education? The teacher should teach health habits and conduct the physical activities of the program, for they are educational activities; they have been a part of the educational program for years and as such have been assumed to be within the province of the classroom teacher. Should the teacher handle physical examinations and watch for the appearance of communicable diseases? These two phases of the program are not educational processes; they are factors of health control and are within the province of the physician and nurse.

If the teacher conducts the annual physical examination, what does it amount to? In Virginia, nurses and physicians checked the teachers' work in examining school children; they found that the job had been reasonably well done. The city of Detroit reported a similar experience. The procedure is so simple that it is a reflection on the intelligence and observation of the teacher trained for the task to infer that she cannot weigh and measure the height of children and compare results with the standard weight chart for determining underweight; that she cannot test the vision with the Snellen eye testing card; the hearing with the conversational voice; the skin for eruptions and sores, and for evidences of impetigo; the neck for swollen glands and goiter; the teeth for evidences of irregularity and decay; the mouth and nose for evidences of adenoids and diseased tonsils.

These constitute the common physical defects that figure so prominently in the lack of health in the ordinary child; these factors should constitute the major portion of the physical examination. Experience proves that the total school enrolment will be given a physical examination if the teacher handles it. This is important, for it saves the time of the doctor and nurse for the reexamination of pupils found to be physically defective by the teacher. This

leaves the major part of the professional services for the correction of defects found.

Can the teacher effectively handle health control by detecting the evidence of the common communicable diseases?

The bulletin of health education No. 18, U. S. Bureau of Education, says: "When it comes to recognition of communicable diseases in schools, there can be no substitute for the teacher, as neither a doctor nor a nurse can always be present. The teacher knows or should know better than any one else the normal behavior of her children and can the more readily detect variations from that normal which may indicate the onset of disease." Clark Hetherington of Teachers' College, Columbia University, says: "Any organization that deprives the teacher of the control responsibilities takes away fundamental elements for efficiency in teaching and reduces the effectiveness of the school health control."

The usual symptoms for the teacher to note in addition to behavior are flushed face, unusual pallor, inflamed eyes, running nose, cough, skin eruptions and swollen glands in the neck. Inability to handle these simple factors in the daily physical inspection would discredit a teacher's ability and intelligence.

In 1922-1923, an agricultural high school, drawing its pupils from the same type of home as the other schools of the district, maintained a daily schedule of physical inspection and physical activities. As a result, the principal reported a maximum absence of 6 per cent. for sickness. The other schools of the district with less efficient programs were closed during an epidemic of spray borne diseases.

Having established a program of physical education in conformity with the popular conception and having shown that for economic and pedagogic reasons the responsibility for the program is and should be with the classroom teacher trained for the job, there remains for an effective program of physical education in rural districts the cooperation of the school board, parents and patrons. If the school board is in favor of a program of physical education, the members cannot complain of the waste of teaching time necessary for the program, or the waste of fuel when windows are raised for ventilating; parents cannot object when on an order from the teacher or principal Johnny is sent home from school because he is sneezing and coughing.

With the correct program of physical education and the cooperation of the community, small town and rural problems of physical education will be solved in proportion to the diligence and conscientiousness of the classroom teacher.

What You Should Know about Cosmetics

HERMAN GOODMAN

THE USE of cosmetics has become universal. Both men and women have recourse to face creams, powders, hair lotions and hair removers, and for the most part, the user is not aware that there may be danger in the bland looking preparations he or she buys. The fact that any one user of a commercial cosmétic has not as yet suffered from its application is no guarantee that freedom from future discomfort is assured. The fact that a hair tonic is well recommended is an unreliable guide; you may not find it innocuous.

A commercial cosmetic may prove a failure when used in some cases because of its constituents. Some cosmetics are manufactured to contain salts of lead, bismuth, mercury, arsenic, numerous acids, and paraphenylendiamin. Certain persons are more susceptible to the first application of these metals and drugs than other persons. Some persons are hypersensitive to small amounts of drugs; others become sensitive to small amounts after they have prolonged the use of them.

Persons express intolerance to a particular cosmetic, although they have used the same brand for long periods without any former ill effect. In these instances, about the only explanation that can satisfy the conditions is that the formula has been altered by the manufacturer. Either the individual ingredients have been changed, or there has been a variation in the amount of one of them.

The ointment base of some of the cream cosmetics may be the cause of unpleasant reactions on the skin. The grease may not have been chemically pure, or may have contained injurious impurities.

Dangers in Hair Dyes and Restorers

In many persons there are signs on the skin and elsewhere of active intoxication due to hair restorers and dyes. The ingredient of the dye which causes the dermatosis and intoxication

is paraphenylendiamin. This preparation is recognized as a severe irritant to the skin, and has a definite poisonous action on the organs of the body through absorption. Used as a hair dye, it may cause a severe and persisting inflammation of the skin both in the areas reached by the external application, and at sites distant from the points of application. Distressing symptoms of poisoning may appear. The folds under the eyes may swell to three or four times their natural size, and there may be signs of irritation of the kidney. Paraphenylendiamin is commonly used as a part of the dye process of furs; such dyed furs may cause the same ill effects as if the paraphenylendiamin were used as a hair restorer or dye.

Creams and lotions ill adapted to the particular need of the person using them may cause local or systemic disturbances dependent on the quantity and quality of the drug contained therein, and the degree of sensitiveness of the person. Each drug usually gives a more or less fixed train of symptoms which the physician recognizes. All too often the user of the cosmetic mistakes the signs of overuse, and applies more of the cream or lotion. The result is that the evidence of the toxic reaction increases.

Hair Removers

A very widely used cosmetic is the depilatory. The healthy skin of most women possesses a fine downy growth of baby hairs which is almost, if not entirely, colorless. The upper lip may have this slight downy growth accentuated, especially if there is a tendency in this direction through the women members of the family.

As long as the growth remains slight and colorless, few persons ought to consider this a blemish. The possessor of such a downy growth, which is entirely natural and healthy, often exaggerates its existence and feels that it is a disfigurement. Then begins a round of activities which ends in coarser hair and a heavier growth; this would have been avoided if the initial step had not been taken. Most advertised depilatories have as their basis some salt of barium. The hair disappears for a while, but as the growing end is within the skin proper, the hair continues to grow from within outward. Besides stimulating the growth of hair, the renewed hairs are thicker and coarser and darker than the down which has been removed by the depilatory. The depilatory must be resorted to at shorter and shorter intervals. No depilatory, no matter how strongly advertised, can cause the permanent removal of hair, because no depilatory which can be applied as a cream or a lotion can permanently cause the atrophy of the cells of the hair follicle.

The use of the electric needle by the inexperienced is attended by dangerous results. If the polarity of the machine is reversed, the steel of the needle is deposited into the skin, leaving permanent deposits of iron. As far as present day knowledge is concerned, no x-ray machine or modification of a machine for x-ray can cause the permanent removal of the hair by the destructive effects of x-rays on living cells, without so altering other cells in the neighborhood as to make future unhappy end-results. The appearance of the skin in the area to which the x-rays are applied for the purpose of destroying the hair follicles may be changed and, too, there is a possibility of future development of skin cancer.

While on the subject of hair removing, a few words may not be amiss regarding patent shaving soaps. Some of these are supposed to operate on the hardest beard when applied from the container without the use of water or a brush. Other brands need water but stress the fact that no lather need be rubbed up. The use of these patent soaps has been known to cause, in several instances, a bad effect on the skin of the face.

Freckle and mole removers are not without danger to certain persons.

Nail polish has been the cause of severe irritation of the skin of some persons.

The fancy stuff used on the eyelashes has caused, in a number of persons, an inflammation about the lids and an affliction of the eyelash follicles.

Use Soap and Water

The advertising of some cosmetic firms seems designed to mislead the reader. It is certainly contrary to the teachings of all who have had experience with the hygiene of the skin to advise that water and soap be replaced by cleansing creams and skin foods. On the other hand, the manufacturers of beauty soaps stress the need of their product. Fancy soaps with fancy names at fancy prices are not essential; a good soap and plenty of water supply the best cleansing.

Since the health of the skin is intimately associated with the general condition of the health of the individual, one should keep up the health of the body in order to preserve the health of the skin. Neither health nor beauty will be found in cream jars or lotion bottles. The cosmetic laboratory for the skin is what goes on inside the skin.

Snow Sculpture Brings Outdoor Recreation

SNOW and ice are the artists' materials used by Chicago public school children in executing on the playgrounds the works of sculpture and painting shown in the accompanying illustrations.

Snow sculpture and ice painting furnish outdoor recreation for thousands of children, who otherwise would spend most of their spare time indoors, which is not conducive to good health, or in gangs on the street, which is not conducive to good morals. In addition to the physical and moral benefits, the children are learning something of color, design and manipulation.

Three years ago, the recreation authorities under the Chicago board of education, sent out word to the schools that the children should be encouraged to compete in a snow modeling contest.

One of the first and happiest of the results was the elephant group. The snow, as the children work with it, soon becomes ice, so that the elephant group became an exhibit of some permanence during the winter season. Thousands of visitors came to see it, and hundreds mounted the central figure and had their first photographs taken on top of an elephant.

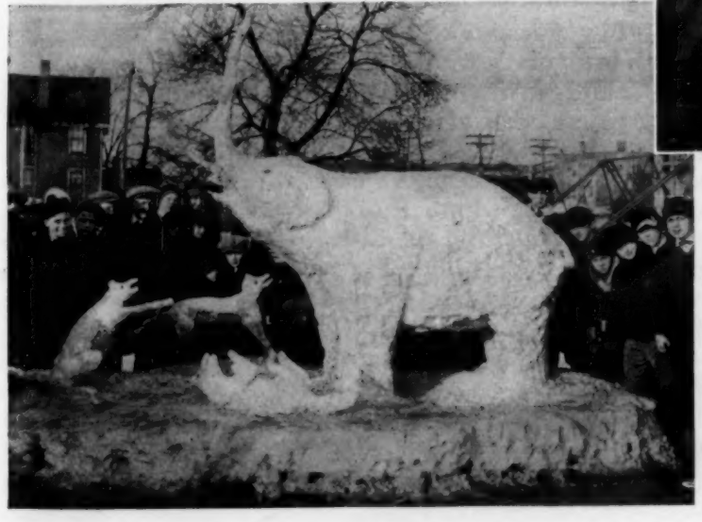
The basketball group was modeled after a photograph of two University of Illinois players. It was the second season's contribution of one of the playgrounds, and on it color was used.

The ice painting shown in the frame is the work of a 13 year old German boy, who had resided in this country only one year and who spoke very little English. He had had no training in painting but was in the habit of copying the designs on postcards. The children of one playground made the 4 inch ice canvas by successive layers of watered snow, and the German boy was given free rein with the brush.

A third new art that has been developed on the Chicago playgrounds is that of making stained windows.

The children take a pane of glass and with putty outline on it a scene. Then with Easter egg dyes, they color water in various shades and run it between the various putty dikes. The water is allowed to freeze, and the glass when held up to the light gives the effect of stained glass windows.

Playing in the snow is healthful, but health authorities suggest a brisk rub down and a change to dry clothing immediately after becoming wet or damp; this is a means of preventing colds or other complications.



Courtesy Chicago Board of Education, Bureau of Recreation

Snakes and Snake Bite

HOWARD A. KELLY

LEAVING out of account astronomy, that greatest of all natural sciences, and passing over the claims of geology, our noblest mundane science, I venture to aver that the two most interesting branches of science are ophiology (snakes) and the fleshy fungi, commonly called toadstools.

The mind of man delights in discovering unity in apparent diversity, in reducing chaos to order, and in working out some great fundamental principle expressed in thousands of diverse ways.

The underlying concept of the toadstool and the mushroom is simply that of a parasol spread to keep the rain and the direct rays of the sun off the precious germs ripening beneath the sheltering cap until they are ready to be cast to the passing air currents and distributed over the world.

The idea of the snake, on the other hand, is that of a rod with an opening fore and aft, sans hands, sans feet. This is simple enough in conception and bare statement, and wonderfully worked out in some 2,000 forms spread over nature's wide domain, inhabiting savannas, forests, deserts, and even the mountains of the land; frequenting lagoons, lakes, rivers, and the wide expanse of the ocean; only growing scarcer as one approaches the perpetually cold climates.

Snake Myths

Let me at once deprecate any exclamation of fear or repulsion at the thought of a snake as foolish, unreasoning and unnatural. Those who foster such a phobia have had it instilled in childhood, often through such absurd stories as Conan Doyle's notorious detective tales and such world-wide myths as that of the hoop snake, which is said to grip its tail in its teeth and turn into a wheel and roll over hill and dale chasing equally imaginary people. The thing to do, declares your interlocutor, when one gets after you is to run for dear life and to jump quickly behind a tree; then the snake strikes the poisonous spine in his tail into the bole and sticks fast. The hunted at once turns hunter and with a club despatches his dreaded foe. The tree, it is added, shrivels and dies from the poison. I first caught this ancient bit of lore far back in the late sixties, when I was a boy 9 years old, from a Japanese friend named Taka-hasha-keetcha-taro, who declared the Japanese call the snake the Wahabi.

Speaking of snake myths, let me explain a few more. Snakes never swallow their young to protect them. Hundreds of people have seen and reported the act, but no reputable scientific man has ever been present either to see them go in the snake's mouth or crawl out. Such a universal notion probably arises from the fact that many of our snakes lay no eggs but are viviparous, producing their young alive, and when such a prospective mother is killed and cut open, active living young may appear and wiggle away.

The fact that even intelligent people can be deceived was illustrated this summer while I was on a canoe trip with a woodsman friend. I was speaking of the bats of Canada, and he remarked that of course I knew how they originated. Then he proceeded to inform me that they hatched out of the mussels so abundant in the river beds. As I was mildly skeptical, he insisted he had seen some on the hemlock tanbark coming out of their shells, and others with a part of a mussel shell still clinging to them. I could not shake his belief, and I had to quit arguing as his feelings were getting hurt. He floored me by inquiring whether or not I believed that such creatures of the air as caddis and dragon flies also came out of the water! Since he had no acquaintance with systematic natural history, I was unable to meet his logic.

Here is another reputed act of which snakes are never guilty: they don't suck the milk from the cows in the pasture, nor does the poor cow at a certain hour each evening seek surcease of sorrow from her overburdened bag by resorting to some secluded spot in the meadow where a big blacksnake assumes the rôle of dairy maid and gorges himself; this I affirm, although thousands of farmers are ready to declare they have proof positive to convict the blacksnake.

Again, there is no snake possessed of a poisonous breath, even though many people have been known to grow sick after inhaling it. This function is attributed to our poor little misnomered blowing viper or "puff adder," one of the nicest, most interesting, most gentlemanly, and most delightful of all our snakes. He flattens his neck out like a cobra and soon plays dead with a pretty little quirk in his tail, but I never knew one to bite anything but his breakfast. There is, I must admit, in a certain snake a quality that does sustain the above asseveration and which constitutes a

vivid danger down in the South African bush; I refer to the spitting snake, *Sepedon hemochate*, which ejects a spray of poison to a distance of many feet with sure aim, besprinkling the eyes of its foe and causing intense pain and blindness for the time. A veteran collector, J. L. Buck, brought several of these snakes to this country recently and deposited them in the New York Bronx under that indefatigable herpetologist, Raymond L. Ditmars. The one perfect protection in handling the hemochate is always to wear big goggles. Remarkable? Unbelievable? Hardly so much so as the astonishing and established fact that an outraged horned toad squirts a spray of blood from its eye socket and bespatters an aggressor.

A myth widely circulated from generation to generation among children is that do what you will to annihilate a snake, it cannot die until sundown. Naturalists do not believe that snakes charm birds and squirrels, and this in spite of the thrilling pictures of a poor little squirrel with all his hairs on end sitting on a rail fence waiting for a hideous big rattler to devour him. Such an impression has probably arisen from the common observation of a bird almost venturing into a snake's jaws to defend her eggs or nestlings. I must not omit to remark to the credit of the snake family that they are never slimy creatures, as so many gentlefolks imagine.

How Does a Serpent Go?

One of the problems of the age has been: How does a serpent go? Agur, son of Jakeh, propounded it three thousand years ago, recording it among the four things in the realm of nature too wonderful for him. How can a creature without any organs adapted to locomotion glide so gracefully and so swiftly in and over all terrestrial media, burrowing rapidly under the ground, coursing with such speed over the mead as to defy the spry limbs of pursuing man, seeming literally to float like a mist over branches and bushes and through barriers of thorny hedges, parachuting from tree to tree, swiftly traversing the deeps propelled by a paddle-shaped tail, and even gliding over our shifting desert sands as if in a stubble field? (I refer here to our most remarkable sidewinder rattlesnake.) To discourse on these properties would be to write a large book, so I content myself with the observation that commonly the snakes we see flowing so gracefully and so mysteriously propelled, as they make their escape from man's baneful presence, advance by a series of right and left curves as the body takes its purchase on any irregularity or roughness on either side. The snake makes headway just as you and I would elbow our way in a hurry through a crowd, arms akimbo, shoving first against one person and then another and following the lines of least resistance. There is no exaggerated undulatory scalloped motion such as is reported

Photo by Wm. H. Fisher

Skeletonized head of a diamond back rattler, showing the large fang and the group of fangs ready to take the place of an anterior one when lost.

and depicted in tales of monstrous tropical sea serpents; the locking of the ophidian backbone prevents that and utterly discredits the tale. For grasping and holding on to things, many snakes have their large mouths and a formidable array of recurved teeth, truly horrendous in the boas and pythons; many snakes use their lithe prehensile tails as a monkey uses his, to hang from a tree, to get a firm grip or a purchase in a life and death battle with a big animal, thus fixing the arena of the combat in the place chosen by the serpent. Other snakes, also constrictors *par excellence*, use the coils of their whole bodies and throw their powerfully developed muscles about the prey. I am thinking, for example, of our noble army of king snakes, quickly taught to be gentle with man, but a foe to their kind.

What Do Snakes Eat?

What do snakes eat? Nothing vegetable! The sharp hooked teeth forbid that; mastication is impossible. They always eat animal food: insects, worms, frogs and toads, other snakes, birds, eggs, and especially mice, rats and rodents. The giant serpents, boas and pythons, devour monkeys, which abhor them, and the larger horned animals, which they kill instantly, crushing and breaking their bones and molding them out into sausage form; they are then swallowed and the host lies torpid for a season. There is no licking or beslavering of the prey as often depicted.

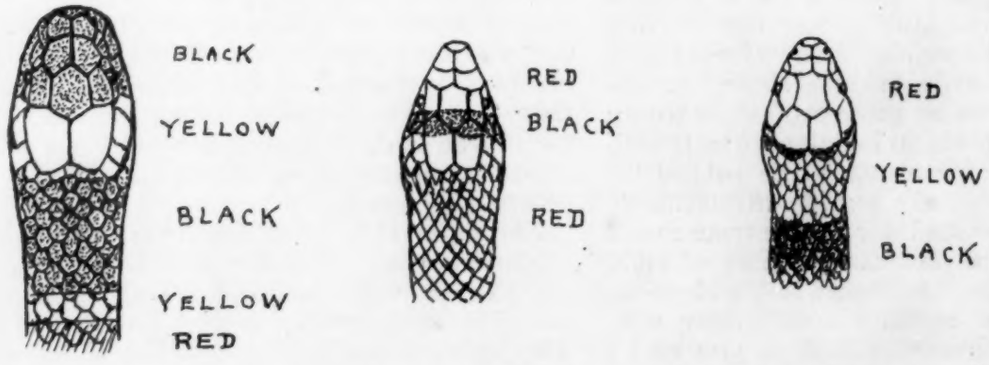
The big snakes of Africa themselves make a toothsome dish; they are greatly esteemed by the natives, who also prize the deer sometimes found within—partly digested, but a great cate! The horns of the deer are at times thrown off by perforating and passing through the side of the snake; this perforation soon heals. Human beings are rarely hurt except when the big snake is being cornered; in extremely rare instances, black children have been devoured.

Let me mention a few remarkable things about snakes before speaking of their classification.

There is a highly specialized poison apparatus connected with grooved or hollow fangs, which has developed independently in two totally distinct and widely separated groups of snakes, namely the vipers and the colubrines, both almost world wide in distribution. There are long, slender snakes, like whip lashes, which spend their lives in the trees and live on birds, eggs and lizards. (Although not a genuine tree snake, what is more wonderful in a tree than our fine coachwhips, close congeners of the black snakes?) There are the sea snakes, all highly poisonous, with their compressed rudder-like tails and valve-like nostrils; they are so perfectly adapted to their medium that they almost never come to shore, and die if kept any length of time on land. I think it was Huxley who once said, in admiration of the marvelous adaptation of the physical configuration of serpents to their varied surroundings, that they could actually, although without hands or feet, do everything but fly. The exception would better have been omitted, for there is a flying snake frequenting South India, China, and the Malay peninsula, which draws its belly in to its backbone to form a spreading concave arch and, stiffening itself, launches off and parachutes to a distant tree like a flying squirrel. A snake called *Dasypeltis*, of tropic and South Africa, lives on eggs that its minute teeth do not crush; down in the gullet of this snake a series of large "teeth," hypophyses, tipped with enamel, project from the backbone and break the eggs as they pass; the shell is shortly ejected as a pellet. Other egg-eating snakes crush the egg by an obvious violent muscular contraction, just before the egg reaches the stomach. There is a snake found in Siam, called *Herpeton tentaculatum*, whose life history I wish we knew better; it has a remarkable excrescence on its nose, possibly standing in some necessary relation to its means of gaining a livelihood. The modifications of the noses and rostra of snakes demand another chapter.

The world at large recognizes but one classification of snakes, the poisonous and the harmless, and with characteristic injustice misplaces a large number of the latter in the former group; the result is the treatment of every snake as though it bore a potential death sentence. This classification is most unfair to our North American poisonous snakes, which are comparatively harmless; these snakes do not attack unprovoked. If one is met suddenly and unexpectedly at close quarters and assumes a threatening mien, it is better, I think, to stand stock still and observe the snake, which, after a pause, will turn and escape. Many localities in various parts of the country bear the unsavory reputation of being snake infested and dangerous in the highest degree, but excepting sundry resorts of water snakes where food abounds, such a reputation is rarely deserved. I have, for example, roamed over all parts of Florida for over twenty-five years and have only encountered one diamond back rattler! It was one I picked up on the beautiful shore of Volusia County and carried back to let it escape into the bushes. In India and Africa, it is true, there are exceedingly dangerous, aggressive large snakes, and only in lesser degree are certain ones dangerous in South America. About 20,000 lives have been snuffed out yearly in India from time immemorial, while the total fatality of the whole world must more than double this figure —a vast army immolated upon the fangs of cobras and vipers. Few are bitten in the United States and only a small number of those bitten actually die. Such frequent accidents arise in the hot countries from the custom the people have of going to their work in fields and bush without any covering to legs or feet; many are bitten in India from the habit of sleeping in the jungle at night.

Turning more particularly to our own snakes, and first of all to the poisonous ones, there is no



ELAPS "CORAL SNAKE" NAT. SIZE

CEMOPHORA 1.5 NAT. SIZE

LAMPROPELTIS NAT. SIZE

Drawing from R. F. Deckert

The distinct markings of the coral snake are black, yellow and red rings on the head and body. The color scheme is presented in the diagrams, differentiating the coral from the scarlet and the scarlet king snakes. The coral has a black muzzle, while in the case of the others, the snout is red.

rough and ready way for the inexperienced quickly to recognize them as a group by some obvious mark; mistakes are made every summer's day all over the country in thousands of instances, resulting in a holocaust of perfectly harmless and useful creatures. In this, I am inclined to think the automobile our worst offender. The sole members of the poisonous group with an obvious self-advertising and distinguishing mark is the genus *Crotalus*, the rattlesnake. This snake is limited to the new world, where we have some sixteen species ranging over all parts of the country from Canada to Mexico and extending, fewer in numbers, into South America. One cannot appreciate in these days the appeal to the imagination of the old world, when these extraordinary snakes with their cascabels or rattles were first reported from the mysterious new world.

How to Know Poisonous Snakes

Although there is no one token to label them all, it is, however, easy to know our poisonous snakes if we give a little close attention to the matter. They fall into three groups: the rattlesnakes, the copperheads with the closely related true water moccasins, and the coral snakes.

Our fourteen big rattlers (*Crotalus*), are easily known by the celebrated sonorous caudal appendage; one of them is the sidewinder referred to, which has horns on its head like some African vipers. There are two pigmy rattlers (*Sistrurus*), little fellows about fifteen inches long with a tiny, scarcely audible rattle.

The copperhead (*Agkistrodon*), sometimes called the highland moccasin, is of a light brown color with large darker brown transverse blotches; the head shows the copper tinge. It has an angular broad head, a fat jaw, an elliptical pupil, and a deep pit between the eyes and the nose—the distinguishing mark also of the moccasin and the rattlesnake. The adult length is from two to two and a half feet with a short tail.

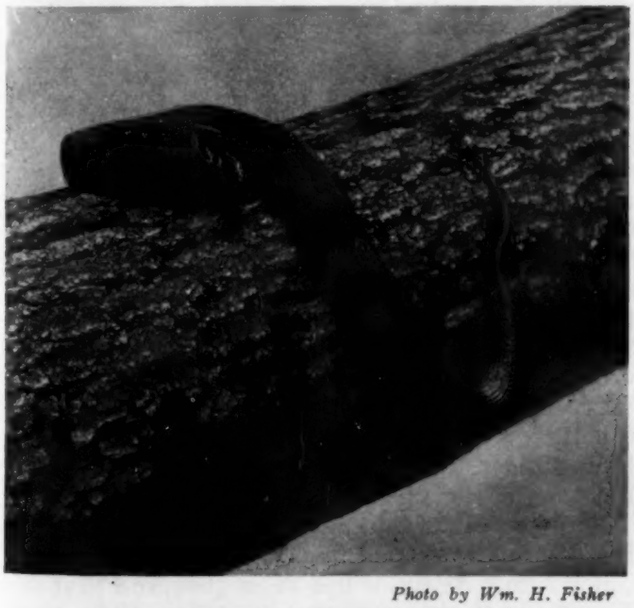


Photo by Wm. H. Fisher

Cotton mouth moccasin resting on a log. Note the characteristic head marking and the absence of coloration of body; this is an older snake.

Photo by Wm. H. Fisher

Cotton mouth moccasin showing the white interior of the mouth and teeth; the large fangs above are covered with mucous membrane. Note the rough scales on the body.

The water moccasin or cotton mouth (*Agkistrodon piscivorus*), literally the hook-toothed fish-eater, lives in the sluggish waters of the South from the Dismal Swamp of Virginia down to Texas. (Marylanders will please note this northermost habitat.)

There are two coral snakes (*Elaps* or *Micrurus*), one extending from North Carolina down into Central America and the other found in New Mexico and Arizona; both have smooth scales.

Rattlesnakes, copperheads, and moccasins belong to the crotaline group of the vipers, which are distributed in almost all the warm parts of the world. Their distinguishing mark is a pit or deep depression down into the bone, richly supplied with nerves, and found between the eye and the nostril; this possesses an unknown function. The head is broadly triangular, owing to the development of the cheek area where the poison sacs lie. The eye has a vertically elliptical pupil, and the scales are keeled. The moccasin, when approached down near some pond or swamp, raises its head and throws it back in readiness to strike, the wide open mouth displays the white cottony folds of the mucosa; it is a threatening but harmless object if left alone. They are so commonly confused with other water snakes, especially in the North with the common pugnacious *Natrix sipedon*, that the annual slaughter of the latter is immense and only equaled in number by the hairbreadth escapes of its imaginary prospective victims! I

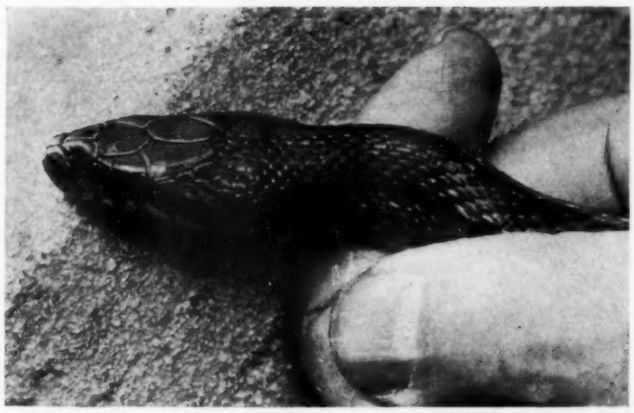


Photo by Wm. H. Fisher

Corn snake, showing the slight difference between head and neck; the large plates covering the head are a characteristic of our harmless snakes, but not distinguishing them from the coral snake.

do not, however, recall in recent years any reports of true moccasins found even so far north as the Dismal Swamp. Down in Florida, the confusion is constant between moccasins, taxi's (as I call *Natrix taxispilota*), and the cyclops (*Natrix cyclopion*), different as they are when examined close at hand. The best way to be sure is to catch (I do not say kill) the snake and look for the fangs. Horses and cattle when they go down to a stream and thrust their thirsty nozzles in for a drink are sometimes bitten by moccasins. A colored boy, some years ago, waded into the water and stirred it up vigorously to make it muddy; he trod on a moccasin, was bitten, and died. This is one of a very few cases. The copperhead, too, must be examined near at hand, its rich color observed, its fat triangular head studied, the wicked vertical pupils noted, the pit seen, and the erectile fangs noted. These fangs are ready to strike with a convulsive movement into anything offered. If allowed to bite over the edge of a glass, our vipers always eject their yellow drops of poison into it.

The *Elaps*, or coral snake, the American cobra, is at once, paradoxically, the most and the least dangerous of all our poisonous snakes. The paradox lies just here: it is a small and secretive animal, generally hiding by day, and even when captured and handled freely is not likely to bite unless it is hurt. They have often been caught and kept as pets, being mistaken for the harmless and beautiful scarlet king snake. Indeed by many they are called garter snakes. If, however, the coral snake is squeezed too hard, it grabs the offending thumb or finger, holds on like a bulldog, and chews and injects its poison into the finger or thumb. All the persons bitten that I have known of personally have died quickly. During the Civil War, a soldier in Florida carried an *Elaps* as a pet. He wanted to preserve it and tried to force the snake into a small bottle; it bit him and he died within a few hours. A few years ago, a man in West Palm Beach pinched one and it bit his finger. (I think John Barleycorn was mixed up in this case.) The man mockingly stuck out his tongue, exclaiming, "You will bite me, will you?" and it bit him there too. Death occurred about one o'clock that night, and a funeral a couple of days later!

Even the *Elaps* is not our deadliest animal; there is a black spider as big as a pea, of the widely distributed genus *Latrodectus*, looking something like an *Epeira*, which has a number of victims to its credit; our species is *Latrodectus mactans*—the "slayer."

Small Danger from Poisonous Snakes

Facing the facts, the danger of our poisonous snakes is trifling in comparison with that from eating toadstools, which yearly cause deaths in many of our large cities. The motto of our poisonous snakes is that of a Civil War general: "All I ax is let me alone." Or the German: "Thu' du mir nichts, ich thu' dir nichts." Most of those who are bitten go after their bites. A couple of years ago in Florida I was struck by a large moccasin out on the Kissimmee prairie; I handled him carelessly. The result was an operation the next day, and a hand swollen like a pincushion for some time. The hemolytic effect of the poison was evident, as my finger bled all that night and well into the next day. I saw a bad slough in a woman's leg last spring, caused by the bite of a rattlesnake which invaded her hencoop. She went out in the night to investigate the cause of the cackling, and walking around in her bare feet she stepped on the rattlesnake and was bitten. If all the workers on the plantations of South America kept their pedal extremities covered, the number of deaths from snake bite would be greatly lessened.

Foolish Notions Still Prevail

A child is more likely to die from snake bite than is an adult, as the dose of the poison is relatively larger. I recall an instance of death from a pigmy rattler; a child went out barefooted into the yard after dark and stepped on one. Now and then a death occurs from the bite of a copperhead. Its poison is as virulent as that of the rattlesnake, but is less in amount. A dog bitten by a big rattlesnake, say a diamondback, may almost drop dead in his tracks; sometimes he comes home from ranging the fields with a fearfully swollen head, only to survive after a long illness. A clever hunting dog has been known, in the chill of the morning when the snake was stiff, to maneuver until he could grab his parlous prey just back of the head and dispatch him. Again, it has been observed that the long fang of the serpent will strike all the way through the cheek when the poison is squirted into the mouth where it does no harm.

The bite of the coral snake leaves only the little mark of the fang without hemorrhage or discoloration. Death comes from the effect of the poison on the nervous system; it is neurotoxic, affecting the respiratory centers. This is particularly the action of the deadly Australian blacksnake, *Pseudechis*. A rattlesnake bite, on the other hand, causes much pain and local hemorrhage with edema and discoloration, followed by gangrene and sloughing if the victim survives.

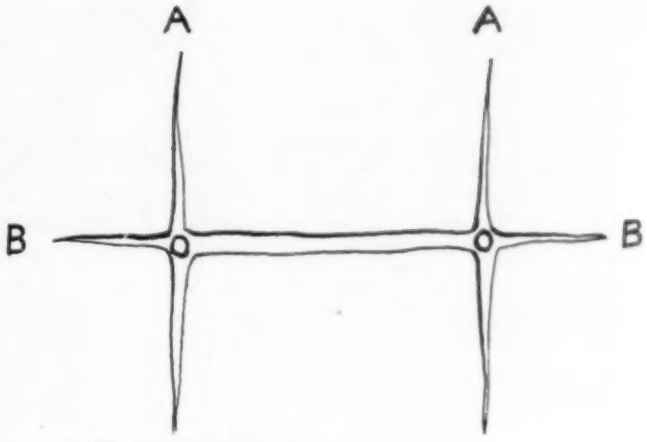
There are several detrimental and foolish notions prevalent in primitive communities. One is that some old wiseacre in the community is a better person to treat snake bite than an experienced physician; another, that some unusual and nasty dose must be given to meet the emergency; and, lastly, that an amount of liquor sure to kill a healthy person may be given with impunity. Then there still linger stupid ideas about the efficacy of madstones; the state of Virginia actually bought one for a large sum from a quack in the 18th century.

As to treatment, I am almost inclined to assert that in our country more people are killed by the "remedies" for snake bite than die from the snake's poison. Kerosene, so often given, is of no use and is fatal when taken in large quantities. In a case I know of, no venom had been injected, yet kerosene was given; it was fatal. Whisky has buried many a victim who would have survived; alcohol does no good but acts as a depressant. The foolish but popular notion is that when a man is bitten by a snake he cannot be made drunk and that a pint of whisky is good, but a quart is better for him. Never stupidly put a lot of gunpowder on the bite and explode it. Remember that "recoveries," when an overdose of the remedy has not been given, have often followed the bite of a harmless snake, real or imaginary!

Treatment for Snake Bite

The rules of treatment for a person bitten by a poisonous snake are:

1. Above all else act promptly; time is of all things the one most vitally important factor.
2. Keep cool and act with deliberation.
3. If a person not needed to treat the patient is available, let him capture the snake and keep it for identification.
4. The bite being almost invariably on hand, arm, or leg, throw a handkerchief around the limb well above the wound, knot it, and insert a stout stick under the loop and twist until the circulation of the limb below is cut off.
5. Take a sharp knife and cut deeply in the long axis of the limb through each fang puncture. Then join the cuts by an incision from one opening to the other.
6. If permanganate of potash is at hand, make a strong dark solution and insert it into the bottom of the wound, washing it out and putting in more. Fifteen minutes after the bite it is useless to use the permanganate, the poison having diffused itself into the tissues.



OO are fang punctures.
AA are vertical deep incisions.
BB is cross cut laying wound wide open.

7. Release the tourniquet (ligature) after twenty minutes for ten or fifteen minutes and apply it again for twenty minutes.

A boy working with his father in an orange grove near Sebastian, Florida, was bitten by a rattler. He cried out and his father, as he ran to him, whipped out his jackknife and promptly cut out the section where the punctures were; no harm followed. If people wait to be carried to a hospital, there is little hope. A man similarly bitten, but not given immediate care, died last season in the Clearfield Hospital, Florida. A woman at Ozona was bitten by a poisonous snake. She had a doctor, but when she felt that she would survive, she called the village Solon. The result was a bad slough and probably permanent lameness.

Our nonpoisonous snakes, those gentle, lissom, graceful creatures traversing all parts of our country, roaming over hill and dale and frequenting our waterways in search of their humble livelihood, are grouped in some forty-seven genera (see Frank N. Blanchard's admirable key), which I could not differentiate without writing a substantial volume. In number, the individual species creep up approximately to 200—all harmless to man; many are beneficial by reason of their constant destructive attacks on agricultural pests, notably grasshoppers and many ubiquitous rodents. There is no single mark by which they are classified, except by the lack of a poison apparatus and the associated fangs. The different groups possess, however, assemblages of characters which by variation serve to establish generic distinctions obviously justified to one who has a personal acquaintance with them as a field naturalist.

Some Differences in Characters

Some of the characters by which snakes differ more or less widely are the relation in size

between head and neck, the general body habit —whether long and slender or short, and the relation of tail to body length, the bony skull, the scales of the head, the number of rows of scales covering the body from side to side and whether keeled or not or marked with tiny pits, the number of ventral plates (gastrosteges), whether the anal place is divided or not, together with other details, among which color and pattern are important, though variable. Take as an example the blowing vipers, of which there are four: these are obviously all close congeners in spite of color and pattern differences, and so are the various black snakes and the coachwhips.

Our two green snakes seem to lie pretty close together, although one has keeled scales and lives in trees, while the other is smooth and lives on the ground. So, too, are the fine snakes, a genuine family group and for the most part a noble army, and the king snakes, our constrictors. Lastly, our *Natrices,* or water snakes, are obviously a natural group. Then we get into genera of only one or two species whose affiliations may be puzzling.

The harmless snakes show extraordinary differences as their habits of life differ. Some, the black snakes and coachwhips, are as swift as a flash; almost before you glimpse them, they have vanished. Others, like the worm snakes, simply crawl away and seek something to hide under. Garter snakes inhabit pretty much the whole country; the common form, *Sirtalis,* lives in open fields and thickets; another form, *Sackeni,* lives in Florida, and nearly always near streams.

Lack of space forbids me to speak of some of our most charming diminutive snakes; there is the little blue-black ringneck, of the genus *Storeria,* named for Dr. David Humphreys Storer; there is another little snake of the same genus, named for an early naturalist, Dr. James DeKay, figured by Dr. John Edward Holbrook in his beautiful monographs in color issued back in the late forties, now unfortunately so rare, not to add expensive.

I remarked above that our black snakes never chase any one, but I see that Ditmars states that there are exceptions and one may now and then become aggressive if cornered. I have a warm regard for a black snake and a coachwhip; they never submit tamely to captivity, but are ever ready to stand up on their imaginary hind legs and fight every time their captor draws near. But here, too, there are exceptions; I caught a black snake last spring in Florida which became tame in a short time. I have yet to find the coachwhip ready to be friendly.

Among the most beautiful and docile of all snakes, and a lovely creature, is the strikingly saddle-marked corn snake (*Elaphe guttata*). It takes but little gentling to bring this snake contentedly to your lap; it will accept a dead mouse from your hand.

I trust I have said enough, even though in a discursive way, to interest many in the conservation of our snakes as among the most interesting creatures in the great fields of nature committed to our care.

There are a number of remarkable authorities on snakes in our country, foremost among whom is Dr. Tom Barbour, dean of Harvard University. Dr. Alexander G. Ruthven of Ann Arbor, Michigan, one of our greatest authorities, has issued an elaborate study of garter snakes and their variations. Dr. Frank N. Blanchard of the same university has published a work on the king snakes, and a key to all our North American snakes. Dr. A. I. Ortenburger of the University of Oklahoma has worked up the coachwhip and the black snake for his doctorate, separating them back into distinct genera. Dr. Leonhard Stejneger of the United States Museum in Washington is our greatly respected veteran in the field of snakes. Dr. E. R. Dunn of Smith College is a constant prolific worker and writer on this subject. The books of Raymond L. Ditmars on reptiles are indispensable to any new worker in herpetology. Dr. John Van Denburg of San Francisco, who died not long ago, was the greatest systematic herpetologist the far West has produced.

How to Treat Stuttering or Stammering

MEYER SOLOMON

THE TERMS stuttering and stammering are used interchangeably in this article for any degree of the speech disorder which is so common that it attacks approximately 1 per cent of school children, according to reliable estimates. School authorities have found it necessary to have special speech instructors, and there are not a sufficient number of special teachers to cover the field.

By stuttering or stammering I refer to that intermittent speech disorder characterized by transient breaks in the rhythm of speech and spasmodic action of a part or parts of the speech apparatus anywhere from the diaphragm to the lips. This results in one of two main types of speech disorder: (1) the temporary inability to produce sound or articulate speech, no matter what the sound (vowel or consonant); (2) the repetition of a sound, syllable or word with temporary inability to pass to the next sound, syllable or word.

Stuttering is particularly characterized by an internal mental struggle, which is clearly recognized as such by the observer, since it is evidenced by bodily expressions of various sorts. Furthermore, these attacks recur with varying frequency; in the interval between them speech seems apparently normal in every respect, so far as the afflicted one and others are aware.

The Nature of Stuttering

Although many earnest writers and students of this problem do not yet fully appreciate it, nevertheless, it is gradually being realized by more and more workers in this field that the fundamental condition in stuttering, as both cause and effect, is nervous and mental in nature. In other words, the speech defect, no matter how severe, does not originate in the surface organs concerned with speech.

For practical teaching purposes, the speech apparatus may be roughly divided into three portions: (1) the oral—the mouth and throat, from the lips to but not including the voicebox; (2) the laryngeal or vocal—the larynx, containing the elastic vocal cords or bands, and ordinarily called Adam's apple, the hard, sharp-edged projection felt under the skin of the front of the neck, in the midline, about halfway between the lower edge of the jaw or chin line and the upper edge of the breast plate; (3) the respiratory portion, consisting of the lungs and the surrounding chest wall and its attached muscles, including the large dome-shaped diaphragm, which separates the cavity of the thorax from that of the abdomen.

During expiration the lungs supply a current or blast of moving air which sets into vibration the elastic vocal bands, which have been brought closely together. Other structures in and above the larynx are also set into vibration. The larynx is thus called the vocal or phonation portion since it produces tone, voice or sound. By changing its shape, the oral portion molds these sounds into syllables and words—speech. The oral is thus the articulating or speech-producing portion.

Normally, all organs concerned with speech work harmoniously and cooperatively with each other and the rest of the body during the act of speech, but in stuttering there is disharmony and incoordination of the different parts of the outward speech apparatus.

Because of the observable manifestations of speech disorder, the victims of stuttering are tortured by a system of treatment which is based on the false conception that there is a defect in some portion (oral, laryngeal, respiratory, or all three) of the speech apparatus. Many stutterers have been led to believe that their salvation and cure lay in the carrying out of exercises which have for their object the improvement and correction of the imagined defect in the surface machinery of speech. The fact that speech is perfectly normal in the intervals between the stuttering attacks shows that there is no fundamental defect or disorder.

Although certain types of training exercises directed to these organs are helpful, such exercises alone, especially the type generally prescribed, are not the proper treatment for stuttering.

Stuttering is primarily and essentially a disorder not of the body but of the mind, so far as its origin is concerned.

The special inciting causes responsible for the onset of the trouble are numerous: they include illness such as influenza, pneumonia, diphtheria and chorea; shock from injury, operation or some terrifying experience; emotional conflicts of all kinds, overtimidity, feelings of inferiority and excessive self-consciousness; imitation of some one who stutters.

But no matter what the inducing causes of onset, the factors which are responsible for the continuation of the disorder are mental, or,

more specifically, emotional in origin. So far as the recurrence of the disorder is concerned, stuttering is characterized by both mental and physical manifestations, but the mental manifestations are primary, antecedent and causative.

The nervous and mental factors responsible for the continuation and repetition of stuttering are complex, but consist for the most part of a few outstanding conditions. There is a state of overanxiety and overeagerness with excessive tension, especially in social relations demanding speech. Along with excessive hurry and rush in thinking and speaking in these situations there is found self-consciousness and mental confusion with lack of confidence in the ability to speak normally. Fear of social situations requiring speech, embarrassment and shame lead to a stage of overtimidity and increasing self-isolation. Finally, there results either oversuppression of the personality, decided overassertion or indifference. All sorts of personality traits may be superadded, so that we have to deal in stuttering not only with a speech defect but with a personality problem as well.

Consequently, the treatment of stuttering should be directed not to the correction of speech alone, but to the reorganization of the personality as well. Without the reorganization of the personality, results will be temporary and uncertain.

The Treatment

Most cases of stuttering, if at all severe or of long duration, have their individual characteristics and need individual study and handling, but there are some general principles which are universally applicable to stutterers.

Physical health should be at its highest possible peak; a state of poor physical health may produce irritability and fatigue and thus affect the nervous tone, emotional stability and poise. This means regular, systematic, hygienic living, with plenty of sleep; there should be regular, satisfying meals and sufficient rest periods. All existing physical defects should be corrected. This includes the correction of spinal curvature, enlarged tonsils and adenoids and glandular tuberculosis. Tight clothing such as tight garters, belts, ties and shirt neckbands should be avoided.

Special exercises, articulatory, vocal and respiratory, are useful; they should be used only as a part of the treatment and with a full knowledge of the expected results, which are indirect. Properly employed, speech training is helpful in leading to slower and more distinct speaking, and in increasing self-confidence, self-control and poise.

Special tricks are to be regarded as temporary measures; they are to be employed only when in distress and not as constant and permanent aids. They are not curative in any sense. These special tricks include such measures as visualizing the difficult word at the moment of speech block, taking a deep breath when one is in speech spasm, and speaking to a certain tune or melody (the so-called melody cure). These special tricks are indirect and not direct aids; they act by virtue of first producing distraction and leading to slower speech, with more confidence and poise.

One of the great sources of trouble for the stutterer occurs when he finds himself in speech block. Then he becomes greatly confused, self-conscious, panicky and bewildered; he either goes into a mental daze or becomes flurried and ashamed; this is followed by sudden, frantic, wild, blind efforts to continue speaking. This increases the mental and speech hurry and chaos, and consequently exaggerates his condition. The stutterer is aware of oncoming speech block before any evidences of it can be seen by an observer. He often has trouble without noticeable manifestations. He must learn to appreciate that as soon as he is aware of the faintest feelings of speech block, he should not become confused and rush pell-mell into incoordinate efforts to pronounce the difficult sound, but should go more slowly and make sensible efforts to help himself.

Two Types of Speech Disorder

When speech is blocked, one of two main types of speech disorder is present: no ability to produce sound, or repetition of an initially produced sound. In either instance the stutterer is unable to produce the succeeding sound he has in mind. The stutterer will find the following rules of considerable help. When no sound at all can be produced, he is either in deep inspiration or extreme expiration, from either of which positions, if held, no sound can be produced by any one. In that case he should immediately take a quiet, deep breath, thus overcoming the inspiratory or expiratory spasm, and begin again. If successful in producing the first sound but unable to advance to the next, one of two conditions is present: either the stutterer has his mouth more or less open and is endeavoring to pronounce from this position a sound which requires a different position of the speech apparatus (that is, one with the mouth somewhat more closed), or vice versa. An example of the first is the inability to advance from the letter "o" to the letter "v" in the word "over"; an example of the second is the inability to advance from the letter "b" to the letter "u" in the word "but." If the mouth is open, immediately close it to produce the next sound; if the mouth is closed, open it at once for the next sound. If preferred, the entire word may be repeated with this object in mind. This can be carried out by the stutterer without shame, embarrassment or fear that the hearer is aware of his difficulty. The hearer

may, at the most, conclude that the speaker is careful in his thinking and speaking and is presenting his thoughts and expressing them in speech slowly and clearly.

The natural approach to the treatment of stuttering is from the nervous and mental aspect.

The stutterer must sincerely desire to be cured. This may sound superfluous, but too often the afflicted person is quite indifferent. However, merely wishing to be cured is by no means sufficient; he must be willing to work patiently and persistently for his recovery. He must be willing and be prepared to give time, thought, attention and effort to the relief of his condition; he must learn to carry on, despite repeated setbacks, and be content to note progressive, even if slow, but certain return to normal speech.

Own Efforts Are Best

He must accept the fact that he will continue to have trouble with speech until relieved by his own efforts, under guidance; magical, instantaneous results are not to be expected. He must face reality and accept his condition; he must build up within his mind an attitude of fearlessness of his fellow man and a fearlessness of situations in which he may expect trouble. Timidity, self-consciousness, feelings of inferiority, helplessness and incapacity, the tendency to self-isolation and the like must be combated. Confidence in himself and in his speech organs in particular must be encouraged and developed. In this connection he may be justly assured that he is curable. The one treating the stutterer must have his full confidence, faith and cooperation.

Positive autosuggestion, backed up by practice, is valuable, but above all there should be a proper philosophy toward life, himself and his speech organs.

The true goal is the attainment of poise—physical, nervous and mental. Poise means calmness, patience and deliberation. Slower thinking, working, playing and speaking must be striven for; thinking and speaking should be more rhythmical.

Useless fears must be overcome.

To the stutterer I would say: be a good listener. Don't talk too much. Wait your turn. Calm yourself before commencing to speak. Don't speak unless you have something to say. Take your time. Don't get rattled. With dogged persistence and determination, avoid self-consciousness and fear. Live in what you wish to say. Don't try to think out the exact words before you speak; have the thought or thoughts you wish to express definitely in mind. Confused thinking leads to confused speaking and stuttering; with definite thoughts in mind, speak them in simple language, fearlessly, calmly, slowly. When you find yourself talking too fast, check yourself, slow down. Don't try to say too much in too short a time. Don't expect or demand from yourself the impossible. Backbone, courage and morale must be strengthened if one is to be the victor in the battle against stuttering.

Reconstruction of the personality is the basis of treatment against stuttering. To reconstruct the personality, the stutterer should eliminate nervous and mental hurry, overeagerness and overanxiety; self-consciousness, confusion and useless fears must be eradicated. Poise and equilibrium will be gradually attained through these efforts.

Self-respect and self-confidence are preliminary to self-reliance; self-knowledge and intelligent self-guidance will lead to progressive improvement and eventual recovery.

In the case of children, gentle care and sympathetic understanding are essential. This means cooperation between the parents, the teacher and the one guiding the treatment. In the very young, only general methods can be employed; when the child is older, active, intelligent cooperation is to be expected and is generally quickly gained.

There is no royal road to the cure of stuttering.

Home Accidents and Their Prevention

ETHEL M. HANSON

Courtesy of the National Safety Council

The child is never too young to learn about safety.

THE problem of securing and maintaining home safety is a big problem in accident prevention. Fifty per cent of all accidents—40,000 in 1923—occur each year in homes in the United States. The reason is either carelessness or ignorance.

In this day and age we can no longer depend on our instincts to solve our safety needs; we need all the enlightenment that we can secure from federal, state and municipal authorities, institutions, corporations and railroads, the National Safety Council and the American Red Cross. These organizations have gathered together knowledge on safety. The *National Safety News* says, "Knowledge, like money, must be possessed individually to have individual purchasing power, and only a close study of accident prevention methods as outlined in the available literature will reward the student of safety with his share of immunity from injury."

In a survey of several representative communities made by the National Safety Council in 1924, it was found that many unsafe conditions about houses, due to neglect of owners or tenants, were responsible for fatal accidents, but the majority of accidents were due to unsafe practices or neglect on the part of the victims or their guardians. The remedies are education in home safety through the agencies that reach all classes of homes in the community, proper inspection of building operations to insure safe conditions in the original construction and adequate play facilities where safe conditions for play cannot be provided at homes.

Types of Home Injuries

First in the list of home injuries are falls. Thirteen thousand people were killed by falls in 1923 (almost as many as were killed by automobiles). There were falls from ladders, chairs, boxes, porches, platforms, stairs, roofs, trees and poles; from slipping in bathtubs, on icy walks, greasy and soapy floors, highly polished surfaces, banana peels and refuse; from tripping over furniture, lumber, refuse and from losing balance.

Second are accidents from burns and scalds, burning houses and clothing, open flames, hot surfaces, hot water and other liquids, acids, and explosions from gasoline, kerosene and illuminating gas.

Third are accidents from asphyxiation by unburned illuminating gas and carbon monoxid, from improper combustion of illuminating gas and other fuel, as well as from automobile exhausts in garages.

Mistaking poison for medicine, poisons in food and blood poisoning from neglected wounds are next.

Cuts and bruises with tools, slivers and nails in refuse, kitchen utensils and toys, stand high in home injuries; accidents from mechanical equipment, electric washers and ironers, automobiles and toys; accidents from electricity by grounding through the body are factors.

Rickety ladders, unstable chairs and weak boxes are treacherous. An unrepaired stairway is a potential hazard; an untacked stair rug and a littered stairway are menaces. The moments that are allowed to elapse between the spilling and the wiping up of greasy substances from the floor may be disastrous ones for the person who happens by just then. An untacked rug on a polished floor has caused several serious injuries. "Haste makes waste" when one rises

quickly out of a soapy porcelain bathtub, rushes down icy steps or runs over icy walks.

What about the poisons in your medicine closet? Is the skull and crossbones sufficient protection against misuse? Perhaps the point of a pin sticking up through the cork will be an additional warning. Better still, there should be a separate closet for drugs that children are curious about and that adults may take by mistake.

Keep tools and sharp knives where the youngsters cannot get them to use on the furniture, and their fingers. These should be kept in a separate drawer out of the reach of children.

Guns, if one must have them, should be locked away from children. "I didn't know it was loaded" is a senseless alibi.

Stepladders should make climbing easy and safe. Be sure that they are in good repair and are set up securely.

Electric irons, left connected on ironing boards, have started many fires. Disconnect your iron when you are called away from the board.

Celluloid will ignite from a hot radiator or a curling iron. Every one should be cautioned about its inflammable and explosive qualities.

Gasoline gives off vapor at an ordinary temperature; it is highly explosive. The vapor is heavier than the air and settles near the floor; opening a window will not always clear the atmosphere. Use gasoline in a room in which a door can be opened. Friction of clothing cleaned with gasoline, especially silk, wool or fur, frequently will generate a spark and cause an explosion. Handle gasoline as you would gunpowder; it is dangerous.

A small break in the skin is large enough to let in enough germs to cause infection. Most cases of blood poisoning are not from severe injuries, but from neglected small cuts, scratches, slivers and pricks—the kind that seem too small to bother with. Iodin—a small bottle of it—should be kept in the locked cabinet for poisons and should be used on an abrasion, cut or prick.

Poisoning by food is common. Canned foods and shellfish frequently cause illness and death. Only the best grades of canned goods should be used and the cans should be emptied immediately when opened. Only fresh shellfish should be eaten.

Burns cause 8,100 deaths a year. Burning, and scalding are accidents which occur most often in the kitchen. Each year 1,000 children are burned to death from playing with matches. Boiling water should be treated like poison or fire. Mothers should be cautioned to keep matches out of the reach of children and to turn the handles of hot pots and pans away from the edge of the stove.

Gas kills more than 3,600 people each year; nearly this number of people die from liquid poisons and impure foods. Blood poisoning from infected wounds takes a tremendous toll of lives to pay for our thoughtlessness and carelessness. Babies are disfigured or blinded because their inquisitive natures led them too near a pot of coffee or a pan of steaming cereal. Mothers should not be too busy to pick up fallen pins and needles and to put out of reach thimbles, coins and beans. Slipping on a carelessly thrown banana skin has caused meningitis; a littered, worn, unbanistered or unlighted stairway can be the direct cause of a crippled existence.

What can we do to prevent accidents in the home so that by the end of another year the toll under this classification will be at a minimum? We must increase our watchfulness and carefulness. We must keep a rigid account of ourselves so as to perfect ourselves in home safety; we should be the "safety managers" of our homes. Children quickly adopt our methods; they imitate our every act.

"It behooves parents and older children to eliminate their reckless habits, if they would have the younger children acquire safe ones. It is difficult to establish an age line for safety teaching," says Mrs. Joseph Wilson in the *National Safety News*.

"The only age limit that can be placed on the teaching of safety is the time when the child first begins to imitate. The infant's first world is his mouth and as soon as he can use his hands, everything that his little hands can grasp goes into his mouth. It may be a poison, or some substance that will cause choking. A child 2 years old may not know the meaning of the word match or the danger of striking one, but if he sees father light a match by striking it on the table or window sill, he will try to imitate father and will start a flame the first chance he gets. Correct habits on the part of adults will set a proper example for the child and will prevent many injuries."

Adults should familiarize themselves with the safety and educational organizations of the community in which they live.

The National Safety Council has made a study of accidents and has prepared comprehensive handbooks, charts, posters and other literature covering various forms of accident prevention, all based on accidents which have happened and which are still happening. They are conducting surveys and campaigns to show the need and to suggest ways of alleviation. Private organizations, industries, and the railroads are making headway with their educational work in accident prevention. The Red Cross in its educational department is making a nation-wide effort to educate along the lines of prevention and first aid. It is the woman in the home that safety organizations are so anxious to reach. She needs a background to help her to see, to know, to prevent and to care for, if the occasion demands.

Eyestrain: Its Cause and How to Avoid It

CASSIUS D. WESCOTT

THE structures of the eye are so delicate and so easily damaged that any injury or inflammation should receive immediate and skilled attention. An eye containing a foreign body, such as dust, soot, metal scrap or glass that cannot easily be removed, or an eye that has been cut or scratched, should be closed and tied up immediately with a bandage or a clean handkerchief until a physician can be consulted.

The most sensitive and highly specialized organ of the body is the eye. What organ, aside from the heart, is more constantly used during our waking hours?

Consider for a moment the anatomy of the eye. The first thing about an eye to attract our attention is the beautiful color of the iris surrounding the pupil. If we look carefully we shall see that the iris is not on the surface, but that we are looking at it through a beautifully clear, transparent membrane, convex in form, called the cornea. Between the cornea and the iris is a small space filled with a watery fluid—the aqueous humor. Back of the pupil, which is simply a hole in the iris, or colored membrane, is the crystalline lens, a biconvex solid body, in youth and health clear as crystal. Back of the lens and filling out the cavity of the globe is the vitreous humor, a transparent jelly. Lining the eyeball is the retina, a delicate nervous membrane made up of the expanded fibers of the optic nerve which enters at the back of the eyeball. The outer layers of the retina and the choroid outside of it are deeply pigmented, converting the globe into a "dark box," or camera. The strong, fibrous membrane giving form to the globe is called the sclera from its hardness.

Eyestrain

The most widespread of all eye troubles is eyestrain. Eyestrain and its effects cause more pain and disability than all other eye troubles put together. It probably is responsible for more headache than all other things, to say nothing of eye pain and fatigue, facial spasm, nervous dyspepsia, nausea, vertigo, general fatigue and nervousness, lack of power of concentration, sleeplessness and many other ills. As we ordinarily consider it, eyestrain is due to our efforts to use our imperfect eyes without correcting glasses, or with glasses improperly fitted, but a perfect eye may be strained by improper use, by too much work without proper periods of rest, and by use in bad light. Defective eyes, however, cause the most trouble, and there are very few eyes indeed in which no measurable optical defect can be found. Only about 10 per cent of all eyes conform so closely to type that they may be called normal. At least 60 per cent are so defective as to cause ill health, reduced efficiency or poor sight. The defects of the balance are compensated for by a vigorous accommodation in strong or insensitive individuals, mostly in outdoor occupations.

In order to understand eyestrain and its results, one must have a fair comprehension of the function of the eye and of its defects. We do not literally see with our eyes; we see with our brains a picture formed in the eye acting as a living camera. The cornea, the aqueous humor, the crystalline lens and the vitreous humor constitute its refracting system, the optical center of which is at the posterior surface of the lens. The iris is a perfect diaphragm, automatically contracting and dilating to regulate the amount of light entering the eye, and at all times shutting out marginal rays. The delicate retina not only forms an excellent screen for the reception of images, but has the marvelous power of transmitting these impressions through the fibers of the optic nerve to the brain as definite sensations. Rays of light entering the eye from an external object will undergo a series of refractions, all tending to make them more convergent, and a real and inverted image will thus be formed of any external object to which the eye is directed. If this image falls on the retina, the object is seen; if the image thus formed is sharp and sufficiently luminous, the object is seen distinctly.

Imperfect vision may be due to faulty development of the eye, to acquired optical defects, to changes in the tissues of the eye, or to disease or injury of the brain. One may have a perfect eye and yet be quite blind, because of a tumor of the brain or an injury of the optic nerve.

The refraction of the eye is its power, when at rest, to focus parallel rays of light. The accommodation is the power of the eye to adapt itself to vision at different distances. The chief factors of accommodation are the elasticity of the lens and the action of the ciliary muscle. By the action of this little muscle within the eye, the lens assumes a more spherical form. As the convexity of the lens increases, the refract-

ing power of the eye is increased and it is adapted to vision at a near point. In the normal eye, parallel rays of light, or those coming from a distance, are focused on the retina when the eye is at rest, without the aid of accommodation. Such an eye is said to be emmetropic.

Hyperopic or Farsighted Eyes

The hyperopic eye is the short eye, the undeveloped eye. Obviously, parallel rays would be focused by such an eye, when at rest, at some point back of the location of the retina if the misplaced retina did not interpose. A blurred image will be formed on the retina in its faulty position. Persons with such eyes are sometimes spoken of as farsighted, because they see more easily in the distance than at the near point, though they see nothing clearly at any distance without an effort.

All human beings are born hyperopic; the new-born baby sees nothing distinctly. He often reveals but little muscular coordination either, and alarms his mother by looking crosseyed. If the baby is well nourished, and escapes the serious diseases of infancy, the eyes grow and round out with the development of the body generally. Many children of school age, however, have defective eyes. As soon as they are confined in a schoolroom, which is perhaps not too well lighted, and begin to use the eyes more at reading distance, they begin to have red eyes and to complain of headaches, or of other symptoms of eyestrain. When proper glasses are worn the hyperopic eyes remain healthy and strong, as the eyestrain is relieved. When errors of refraction are not corrected early, the tendency is toward the development of myopia, or nearsight, especially if there is much astigmatism and if the eyes are improperly used, in bad light or in bad position. Usually headache, restlessness, nervousness, or apparent dulness and stupidity appear first. The backward child is usually a defective child and easily becomes a truant.

Myopia or Nearsighted Eyes

In myopia parallel rays of light come to a focus in front of the retina. Usually this defect is due to straining an eye the coats of which are perhaps already weakened by malnutrition. The person affected sees nothing in the distance clearly without the aid of concave glasses, but he may be able to see well at the near point without glasses, even to an extreme age. The myopic eye is diseased, and the condition tends to increase, with constantly diminishing vision and destructive changes in the retina of the eye. In many cases blindness results. Except for a very few congenital instances, all could be prevented; a tendency to myopia is often inherited.

In astigmatism the refraction is not the same in all meridians. The condition is usually due to imperfect curvature of the cornea and ordinarily is congenital. Seventy-five per cent of all eyes are more or less astigmatic. In high degrees of astigmatism it is impossible for the patient to improve his sight by any effort, and he ceases to try, contenting himself with his poor vision and losing his symptoms of strain. In the low and moderate degrees of astigmatism it is possible, as in farsightedness, to improve the sight by an unconscious effort, from which symptoms of eyestrain result.

Some of the worst instances of headaches seen by physicians are those of indoor workers, with perfect vision, who see well only at the expense of constant effort. When the necessity for the excessive use of the accommodation is relieved by glasses, the headaches cease promptly. Eyestrain is not inconsistent with perfect vision.

Just as all our tissues become denser and firmer with age, so the crystalline lens becomes progressively harder and less responsive to the action of the ciliary muscle that controls its shape. The lens really begins to lose its elasticity early in life, but when the person with normal vision can no longer read at a convenient distance, he is said to be presbyopic. Presbyopia usually occurs at about the forty-fifth year, and convex glasses then become necessary for reading and other near work.

Faulty Muscle Balance

Whenever we look at anything, far or near, those of us who have two useful eyes not only focus each eye for the proper distance, but also bring both eyes to bear on the object, in order to secure the advantage of stereoscopic vision. It is by means of binocular, stereoscopic vision that we estimate distance and appreciate the shapes of objects. A person who has lost one eye is much handicapped. After a time, however, the one eyed man acquires a new ability to estimate distance. This new sense probably has some relation to the amount of accommodation used in seeing clearly objects at different distances. Binocular single vision is made possible by the harmonious, coordinated action of six pairs of muscles.

Sometimes for one reason or another, these muscles fail to act in harmony, and the person is obliged to make a constant unnatural effort to keep his eyes "in line." This constitutes one of the most troublesome forms of eyestrain and sometimes the most difficult to remedy. Most cases of eyestrain due to muscle imbalance can be relieved by careful study and treatment and by repeated changes of lenses, but some cannot be permanently helped, except by operation.

Crosseye

Some farsighted children, especially if one eye is more defective than the other and there is little impulse to binocular single vision, become crosseyed. The explanation is usually simple. Probably such children in nine out of ten cases can be cured without an operation, if

treatment can be begun early and the active cooperation of the parents secured. In some cases treatment should begin as early as the age of 2 years; if it is delayed until 6, cure may be impossible without operation. The word "cure" means here the restoring of single vision with the two eyes as well as perfect parallelism.

Faulty Lighting Causes Eyestrain

One of the most prolific sources of eyestrain is faulty illumination. The eye "reacts" most easily in steady diffuse daylight, such as we get in our offices and homes for a few hours on clear days, from a north window; few who work in the city have uniform daylight long enough for good work. The problem is to obtain that form of illumination which will make for the greatest visual efficiency. Too little light of any kind will strain the eyes, because small objects must be held very near in order to get a larger retinal image than would be necessary in stronger light. As the amount of accommodation and convergence used are directly dependent on the nearness of the object, the nearer we are obliged to approach the thing we wish to see, the more effort we will expend in order to see it.

There is a great variation in the amount of light required by different persons, and at different ages, in order to see easily. Generally speaking, the older we grow, the more light we require. We should always remember that more harm comes from glare and too much light than from not enough; we should strive to obtain a soft indirect light, which gives clear vision with the least discomfort.

Avoiding Eyestrain

The chief problem in the care of our eyes is to avoid eyestrain. Every child should have a careful physical examination before beginning school work in order to discover any defects. Those defects that can be remedied should be corrected. If there are defects that cannot be helped, the life of the child should be so adjusted as to enable him to accomplish the most with the least wear and tear. All of us may dislike to see children wear glasses, and no doubt the constant use of spectacles interferes somewhat with a boy's normal activities, but often much can be accomplished by wearing glasses for near work only. The early correction with glasses of farsightedness and astigmatism often prevents the development later of nearsightedness, with its serious consequences. Records show that the early use of glasses often promotes the normal growth of the eye. Thus spectacles may frequently be discarded after a few years. Sometimes, indeed, they are of use to bridge over a period of special stress and may be discarded after a few months or a year. Glasses that are needed and that are properly fitted can do no harm, but only good. If they are not needed or are improperly fitted, they will usually be rejected and not worn.

Changes with body structures, including the eyes, are occurring constantly, and the eyes should be reexamined from time to time, and the lenses readjusted to meet the changing needs. The question of constant use of glasses at any age is an individual matter, and must be decided after due consideration of the condition of the eyes and the nature of one's work. The adjustment of the lenses before the eyes is of great importance, because we get the true effect of a lens only when we look through its center at right angles to its plane. A lens for the correction of astigmatism has an axis that must be parallel to the best meridian of the eye. If astigmatism is not accurately and constantly corrected, the relief of eyestrain is not only incomplete, but may be aggravated.

Dilating the Pupil

Examination of the eye without dilation of the pupil is unsatisfactory, since one cannot see the interior of the eye through the small pupil. The conditions disclosed by the use of the ophthalmoscope when one looks through the dilated pupil are often of the utmost importance to the patient. When there is any accommodation left, it is impossible accurately to measure the optical defects of the eye without first paralyzing the ciliary muscle.

For these reasons physicians use atropin and homatropin, the drugs that dilate the pupil. The advantages of the method outweigh the disadvantages a thousand fold.

Glare and Excessive Light

Frequent exposure to glare and excessive light causes irritation and congestion of the tissues of the eye and predispose to inflammation, cataract and chronic weakness of the eyes. Indirectly, there is much fatigue from exhaustion of the retina and spasm of the pupil. Indirect illumination with light walls, preferably cream color or light gray, and a sufficient number of units to enable us to regulate the intensity of the diffused light when artificial light must be used, will do much to overcome bad conditions. Such a plan is expensive, as compared with direct lighting, but the saving in comfort and sight will make it pay.

If the indirect method is not available, a plan which will at all times protect eyes from direct rays and which is susceptible of variation to suit the conditions should be adapted. Frequent rests or change of focus during near work are necessary in order to avoid strain. A good rule is to rest the eyes ten minutes every hour.

The Cause, Spread and Prevention of Tuberculosis

LINSLY R. WILLIAMS

ONE OUT of twelve persons in the United States dies of tuberculosis. This does not mean that you have one chance out of twelve to die of this disease, because your chance depends on your parents, your surroundings, your previous condition of health, your present occupation and the manner in which you live.

The cause of tuberculosis is the location and growth in the body of the tubercle bacilli. The tubercle bacillus, a tiny plant consisting of one cell, may be found almost anywhere in the civilized world; almost every person by the time he has reached 18 to 20 years of age has received in his body a certain number of the tubercle bacilli. Just as parasites may lodge in the body of animals and do them no harm, so, also, can tubercle bacilli lodge in the body and do it no harm. This is usually the case, for although it is known that at least ninety per cent of the adult population have become infected with tuberculosis, only about one per cent of the population have symptoms of the disease at any given time.

How Children Become Infected

How do so many persons become infected with tuberculosis? A child born of a parent who has symptoms of the disease in the lungs, father or mother or both, is immediately exposed to the danger of receiving tubercle bacilli in his body. The mother while holding the infant may cough or sneeze and either of these actions produces a fine spray of saliva or sputum frequently containing tubercle bacilli; this fine spray may be received into the child's mouth and breathing passages. In medical language, it is then stated that the child has received a "dose of tubercle bacilli." If the father has lung tuberculosis, he may cough and sneeze over the infant; however, infection from this source is less frequent than from the mother, as the father is not so frequently with the child. Parents may kiss the baby, and in this way they may convey tubercle bacilli or other germs to the infant.

When the child learns to creep, his field of activity widens; although he is in less danger from his parents, he can now reach many things with his fingers. His natural desire is to put his fingers and other objects into his mouth; these fingers or objects may be soiled with moist sputum which father, mother or some other careless person has deposited on the floor. The fingers may be soiled with invisible sputum brought in on the shoes of adults and older children from the outside world.

When the child becomes older his range of activity expands and he plays on the street. He picks up balls, sticks and other objects which may be soiled with moist sputum that has been deposited in the street by persons having the disease. In this way his hands may be soiled with invisible or dried sputum. His hands have ready access to his mouth and nasal passages; in this way it is possible for tubercle bacilli to enter the child's body and to lodge in the lymph nodes, commonly called glands. The presence of such a small parasitic growth may never do harm, but, on the other hand, it may cause a definite inflammation. This inflammation is more frequently noted in the neck and arm pit; ultimately, this causes the formation of a cold abscess, which is a serious condition for a child to have. Rarely are the lungs involved in infancy or early childhood. Meningitis is an occasional result of exposure to infection.

In the majority of instances, the number of bacilli is relatively small; repeated infections do not cause actual disease in the child because all human beings in our civilized countries have a certain natural resistance to tuberculosis. As the child approaches adult life, an illness or other causes may diminish his resistance to tuberculosis; if this resistance is lowered the germs in the lymph nodes may multiply and cause an inflammation which may spread to the lung causing pulmonary tuberculosis.

Standard of Living Is Factor

When either or both of the parents are affected with tuberculosis, their earning power is usually diminished and as a result they are not able to maintain a satisfactory standard of living. In this event, the child's necessities are not always fulfilled; he has an insufficient amount of food, clothing, shelter, medical assistance and nursing; he usually lives in overcrowded quarters and is more liable to be affected with other diseases which diminish his strength. Such a child is not likely to grow into a strong, healthy adult.

Many persons have said that tuberculosis was due to bad housing, insufficient food or overwork, but in all of these instances the original cause is the same—a lowered standard of living,

which includes all of these factors and predisposes the person to develop the disease. In a family which is entirely dependent on its earning power and in which one or both parents are affected with tuberculosis, there is a marked lowering of the standard of living. The children of that family will be more liable to develop tuberculosis than the children of a family in which the income and intelligence of the family are sufficient to provide the necessary standard of living, and, notwithstanding the presence of tuberculosis, to limit or minimize the amount of infection by the application of certain well-known precautions.

It is more common for adults to have tuberculosis of the lungs than to have the disease in any other part of the body. If the disease has developed, an inflammation or a tiny ulcer near a vein may destroy a part of the vein; this will cause a hemorrhage, one of the common early signs of tuberculosis. Tuberculosis of the lungs may occur as the result of childhood infection when some other factor has been added to reduce the resistance of the person; it may be brought about by the adult being exposed for a long period of time to other persons who have tuberculosis. Tuberculosis of the lungs may occur as the result of childhood infection when some other factor has been added to reduce the resistance of the individual; it may be brought about by the adult being exposed for a long period of time to other persons who have tuberculosis. Tuberculosis of the lungs frequently occurs among persons who have been engaged in occupations which cause undue and prolonged muscular work; it may also occur among those whose lungs are constantly irritated with stone and metallic dust. The chief cause of tuberculosis of the lungs in adults is constant exposure to infection by continued association with persons who have tuberculosis; attempting to live on a standard which is lower than that necessary to keep in a good state of health is another cause.

The Prevention of Tuberculosis

As tuberculosis is caused by the introduction into the body of the tubercle bacilli, tuberculosis would disappear if all bacilli could be immediately destroyed on leaving the human body or the bodies of animals infected with the germs. The efforts made to combat tuberculosis during the last thirty or forty years have been based on this fact; an endeavor has been made to instruct all persons affected with the disease to disinfect or dispose of their sputum in such a way as to make it harmless for others. Accurate directions are issued by nearly all health departments; they can be obtained free. There has been a marked diminution in the amount of sputum deposited in public places. However, this is still a definite danger since many persons infected with tuberculosis cough up sputum which contains tubercle bacilli, without knowing that they have the disease.

In order to destroy tubercle bacilli, it is necessary to ascertain the persons who are infected with tuberculosis and to instruct them, or to care for them if they are unable to provide satisfactory care for themselves. Consequently, laws have been enacted which require the reporting of all cases of tuberculosis to the health departments. The health departments then issue instructions either to the physician caring for the patient or directly to the patient. Notwithstanding all the efforts which have been made to apply this law, there are many thousands of unreported cases.

Before the development of our admirable institutions for the care and treatment of tuberculosis, the majority of patients with tuberculosis developed a chronic disease and after a year or more of suffering became too ill to move about. They were commonly cared for in their own homes by other members of the family with little or no sanitary precautions. This resulted in the spread of the infection to other members of the family. Fifty years ago, if one member of a family developed consumption, people thought that one by one all members of the family would succumb to the disease.

Now, a tuberculous patient who through lack of treatment has become a chronic invalid may be placed in a hospital away from his family so that he will not be a source of danger to those about him. In the hospital, sanitary precautions are carried out; there is no danger of infection to any one doing hospital work.

The sanatorium, on the other hand, is designed primarily for the treatment and cure of earlier types of the disease; the sanatorium serves a most useful purpose, for the majority of the patients treated are discharged in good health. Many patients discharged from the sanatorium are not cured in the sense that the parasites are entirely removed from the body, but the patient is able to return to his former or some other useful occupation because the ulcer which has been produced by the germ in the lung or other part of the body has become completely healed. A discharged patient should remember the importance of maintaining a proper standard of living, having suitable food and clothing and observing proper hours of work.

Health departments and voluntary agencies should create the necessary facilities for the diagnosis of early cases of tuberculosis. States, counties and municipalities should provide proper institutional care for tuberculous patients. The people generally and school children in particular should be taught the general principles of hygienic living. If these principles are properly applied, the resistance of the individual will be increased so that if he is already infected, the chances of the disease developing later in life will be lessened.

HYGEIA

A JOURNAL OF INDIVIDUAL AND COMMUNITY HEALTH

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Plain Facts about Health and Disease

THE HYGEIA PLATFORM

WITH the coming of the New Year, by long established custom, one "swears off" all of one's minor vices—and probably resumes them a few months later. HYGEIA is going to reverse the process. We are going to set ourselves up a platform and depend on our readers to keep us up to it.

HYGEIA *will fight!* It will attack all opposition to the spread of scientific knowledge among a public sadly in need of the fundamental facts concerning the human body in health and disease. It will make plain the bases on which rest the cults for the promotion of one-track systems of the causation and treatment of disease. It will expose to the pitiless light of publicity the schemes and the exploitations of all of the harpies who reap tainted profits from the delusion of the sick and the suffering.

HYGEIA *will teach!* It will give to its readers, as soon as available, the facts concerning new discoveries in the field of medicine. It will repeat again the epics of man's battles against filth and disease. It will recount the lives of the great investigators and the martyrs of medicine who devoted their careers and sacrificed their lives in the enduring warfare against bacterial foes.

HYGEIA *will help!* It will aid its readers in solving their personal problems in health and hygiene. It will give instructions as to systematic exercise, diet and bodily care. It will provide information for use in overcoming difficult situations in local health matters. It will stand ready to serve, when and where it can, and to the limit of its resources, all those who feel that the campaign for the eradication of disease, the prolongation of life and the alleviation of suffering is a worthy one.

HEALTH NEWS OF THE MONTH

Man's Relation to the Monkey

Since the trial in Tennessee made evolution a common topic for household discussion, new light on the question is more than welcome. Physiologists have shown that in many instances the lower animals function exactly like man. Indeed, scientists have long been aware of the possibility of grading animal types from the unicellular forms up to the anthropoid apes, which approach nearest to man. Workers in the Rockefeller Institute have just made public a series of studies on the blood of monkeys and apes which is a striking demonstration of the nearness of their relationship to human kind. Since the early part of the present century physicians have known that all human beings could be divided into four groups according to the way in which the serum or liquid portion of the blood acted on the red blood cells or corpuscles. In some instances if the serum of one blood was placed with the corpuscles of another, the latter promptly clumped together; in other cases the corpuscles promptly broke up and dissolved, by the process that the scientists call lysis. In still other instances nothing happened. It can easily be seen then that groupings are possible.

When similar studies were applied to animals it was found that their bloods acted differently than did those of human beings. The very lowest species could not be grouped at all; as one ascended higher in the scale simple grouping became possible; the Rockefeller Institute investigators, headed by Landsteiner, have shown that the blood of the higher apes—the anthropoid or man-like apes—reacts much like that of man.

Mr. Mencken of the caustic tongue avers that the reason the average man objects to the doctrine of evolution lies in the fact that he considers it a direct slur on his grandmother, or on some more remote but nevertheless direct ancestor. But even the supersensitive average man may take comfort in these recent biologic

studies. Investigations of the blood of the apes as compared with that of man tends to show that we are probably descended by different lines from some ancestry in a far distant past rather than by a common line beginning with a remote ancestor and passing through the ape line en route to man. Perhaps one can gain a grain of comfort for wounded pride from that. But at the same time comes the rather disturbing fact that the blood of man is more closely related to that of the ape than is the blood of the horse to that of the donkey. And the latter two are able to hybridize!

The Blair Bell Cancer Treatment

The visit of Blair Bell, famous English surgeon, and the reading of papers before Canadian medical societies focussed newspaper attention this month on his discoveries. The wide publicity brought the usual hundreds of inquiries to *The Journal of the American Medical Association* and to HYGEIA. Blair Bell's method of treating cancer has been before the medical profession for several years. In brief, the treatment depends on the use of a preparation of colloidal lead, which is believed to have specific properties in stopping the cancer growth. Early investigations gave much promise to the method, and English physicians combined to study it, utilizing all the resources of a modern university medical school. Some hundreds of cases have been treated with results that are characterized as interesting. But this is far from the establishment of the method as a specific cure for cancer in the sense that the word "cure" is used by the public. The preparation is not yet available to the general medical profession. It is well that its use should be controlled until the investigators shall have shown whether or not it has any permanent value.

The Harris Cancer Treatment

In Georgia, Dr. H. F. Harris has been receiving newspaper publicity on his method of treating superficial cancer. Briefly, he uses electricity to carry the ions of certain chemical substances into the cancer tissue. The salts used are combinations of sulphur with uranium, a radioactive element allied to radium, and with chromium, an element whose combination with sulphur yields a caustic. One pole of the battery is connected with the back of the patient and the other pole leads to the tumorous growth. Then the current is turned on and the passage of the current carries the solution from the pledget of cotton containing it, which has been placed over the tumor, into the depths of the tumor substance. In a few cases that have been treated Dr. Harris thinks he has secured remarkable results. The method of applying drugs is not original with the investigator, nor is the application of the salts concerned; the combination of the method and the salts may be original. But again scientific medicine demands more than impressions from a few cases treated over a brief period of time. It has long been known that superficial growths are properly controlled without much difficulty by early diagnosis and surgical removal. Indeed, in some instances the mere surface application of the x-ray, of radium, of caustic pastes, of carbon dioxid snow, or other substances has brought about prompt alleviation of superficial cancerous growths.

Safe Milk

Chicago newspapers and the public have been much agitated over the sudden publicity thrown on certain dangerous factors connected with the city milk supply. The milk coming into the city is well pasteurized in the plants of milk distributors, and in general is safe and wholesome. Pasteurization is an effective method of eliminating the large majority of possible dangers from infected milk. But some times men are careless and sometimes machinery does not work; pipes may become clogged and the pasteurization be ineffective. Of course the nearer to purity the milk before pasteurization the less likelihood of any possible harm from faulty pasteurization.

A cow with tuberculosis, particularly when the disease affects the udder, is likely to give milk containing tubercle bacilli. In many states, particularly those surrounding Illinois, legal enactment demands that cattle be tested with the tuberculin tests. When they are found to be suffering with tuberculosis the dairyman receives funds from the federal government and from the state to reimburse him in part for the enforced destruction of the animal. The carcass is sold for fertilizer and soap. An inspired legislator in the Illinois assembly succeeded in securing the passage of an act some years ago that prevents any community in Illinois from insisting on tuberculin testing of cows giving milk for human consumption. The result of this combination of circumstances has apparently been a concentration of tuberculous cattle in the state so that the northern part of Illinois is bitterly referred to by health officials and dairymen as the "black belt" of the dairy industry. Samples of milk coming from the district referred to, which supplies most of the milk to

Chicago, were found to be more than twice as heavily infected with tubercle bacilli than samples taken at random from other counties in the state.

Now the health commissioner of Chicago has started a battle to secure milk from healthy cows, represented in this instance particularly by tuberculin tested cows. The milk distributors of Chicago, having seen the light, express a willingness to aid him in the campaign. But certain farmers and dairymen, fearing financial disaster from the destruction of their cattle, have secured an injunction against the health commissioner which prevents him from enforcing his order. As we go to press the conflict in the courts is imminent. Meanwhile, physicians of Chicago have petitioned the governor to assure the farmers of legal compensation for cattle that are destroyed. Then they too may join in the attempt to clean out the plague and to give the city not the relatively safe milk that it now has but the safest milk possible. M. F.

ANIMAL EXPERIMENTATION

IN several states when the legislatures meet this fall, a bill known briefly as the dog exemption bill will probably be introduced. For this reason primarily HYGEIA publishes in this issue a succinct statement by Professor Walter B. Cannon on the subject of animal experimentation. Intelligent and well-informed readers will not require a repetition of all the sound arguments that may be brought forward in support of scientific investigation. The American business man, the farmer, the teacher, the preacher and the missionary have long since been convinced of the value of the experimental method, involving the study of disease on the lower animal rather than limitation of investigations entirely to such observations as may be made on man. But there still persist, in many communities, little groups of serious but illogical thinkers who, with unreasoning fanaticism, attack scientific experimentation demanding the use of animals.

A few shortsighted possessors of great wealth, stimulated no doubt by the emotional appeal rather than by reason, have bequeathed funds in perpetuity to organizations pledged to battle against animal experimentation. Where there are funds there are jobs for those who are willing to promote regardless of the fact that their promotions may impede progress. Year by year the same bills are introduced into legislatures; again and again the sob-sisters of the legislative halls plead for favorable action on these bills with floods of crocodile tears; ever and ever the weary cohorts of university presidents, professors of the sciences, physicians, and representatives of industries whose progress will be vitally damaged in case such bills pass mobilize to present the same simple facts to the legislators, with the hope of overcoming the deluge of misguided sentiment.

As Dr. Cannon so ably indicates, the infectious diseases that attack man and animals have been and are being brought under control through the wise use of the experimental method. Diseases such as cancer remain to be overcome. The state legislatures will be asked to determine if the methods that have brought success in the control of diphtheria, scarlet fever, typhoid fever, yellow fever, malaria and many other conditions are to be discarded at the whim of the unreasoning followers of the cult of animal worship and idolatry. Of course, animal experimentation never will be forbidden! In modern university and scientific laboratories it is conducted wisely, humanely, and with far greater consideration than is shown to the animals of the street and the field. But what a pity that the funds and the time of so many people should have to be expended year after year to overcome the same subsidized opposition! M. F.

DRY CLEANING AND INFECTION

IN a recent number of the *Cleaning and Dyeing World*, a trade paper, much emphasis is laid on the importance of the dry cleaning of garments as a means of disinfection. The assumption is that the prevalence of measles, whooping cough and some of the other communicable diseases is due to contamination of clothing, especially that of children, and that dry cleaning of their garments is important in preventing the spread of these diseases. Indeed, the dry-cleaners propose that the week after Christmas be made "Dry Cleaning Week" and that dry cleaning establishments throughout the nation undertake to clean the garments of all school pupils in their vicinity at cost—those of poor children to be cleaned without charge.

Whenever commercialism enters into public health matters the truth is likely to suffer. Certainly, undue emphasis is laid by the dry-cleaners on clothing as a medium of spreading contagion. The acquisition of communicable disease in this way has been known to occur, but in the opinion of leading authorities in this field it is relatively unimportant. Says one, "It would probably do more good to wet-clean the hands."

Children afflicted with communicable disease should be rigidly quarantined until the discharges from the body, sputum, mouth spray or other secretions, are known to be free of infectious material. During the illness only such clothing should be allowed to come in contact with the child as may be subsequently disinfected by boiling or immersion in some disinfecting solution. When woolen outer garments have been worn by an infected child, thorough brushing, heating and long exposure to sunlight and air is usually adequate to make them safe.

So far as we are able to learn, no comprehensive investigation has been made into the efficiency of the various dry cleaning methods. Sufficiently long exposure to high temperature, when superheated steam is used, would certainly be effective; it is doubtful if some of the other methods would be.

Dry cleaning is a useful and economic procedure, but the materials with which it deals are not the usual avenues for the transmission of contagion. Close contact with the sick, the convalescent or the carrier of contagion, transmission by soiled hands, eating utensils, toys and other objects which come in contact with the mouth, are the serious dangers. J. M. D.

DIET STUDIES OF RURAL AND URBAN FAMILIES IN ENGLAND

LEGISLATION fixing a minimum wage for agricultural workers has been urged with the argument that the income of the farm worker is insufficient to enable him to secure for himself and family the bare necessities of life, including sufficient food. Investigations of the problem have been made in England at various times during the last 60 years. The most recent study by A. B. Hill of the National Institute for Medical Research, London, is reported in a recent issue of the British *Journal of Hygiene*. A physiologic and economic study of the diets of workers in a rural district (Essex) was compared with a similar analysis of those of workers in the city. The efficiency of the diets was determined as indicated in the height, weight and other measurements of school children in each group.

The daily food requirement of an average man (height 5 feet 7½ inches, weight 145½ pounds, aged between 25 and 50, working 8 hours daily in a climate such as England or France) is from 3,000 to 3,300 calories. The needs of the other members of the family, according to Lusk, are for a growing boy of 13 or over, the same as that for the man; for a woman, a girl of 13 or over, or a child between 10 and 13, 83 per cent of the man's requirement; for a child from 6 to 10 years of age, 60 per cent and for a child under 6, one-half the male adult need.

Nearly three quarters of the income of each family is devoted to food, 31.4 per cent of the food allowance being spent on bread and flour, the staple food. Milk, the best of all foods, especially for children, was consumed in only small amounts, but nearly all families used cheese, butter or margarine and sugar in some form.

The average value of the dietaries of these rural inhabitants was found to be 2,872 calories a day per man; only 17 per cent of families received daily over 3,300 calories per person. Nevertheless, the food taken compared favorably with the food allowance among the workers in the city.

Among the children, the rural boys presented height and weight measurements about equal to those of the city, but the height and weight measurements of the girls were distinctly less in the country than in the city. Other factors enter into the growth of children, such as exposure to direct sunlight and out-of-door air. Possibly if the diets of the rural children were more ample and diverse they would have a distinct advantage over city children. The housing conditions of many of the Essex families were found to be far from ideal, in some cases even deplorable. The amount of money available for clothing and other necessities was also far from adequate.

Any legislation designed to ameliorate the condition of farm workers or other groups should be based, not on guess work and theorizing, but on accurate, scientific investigation by competent experts of all of the facts pertinent to the conditions which it is planned to alleviate.

J. M. D.

The Pansies and the Poppies and the Hollyhocks were glad to see the little toad. What a pretty, perfumy, pleasant little home the garden was!

The Little Toad Who Wouldn't Go to Sleep

ELIZABETH BLAINE JENKINS

ONCE upon a time there was a little round egg in a shining pool, not far from a beautiful garden. Now just being an egg is very tiresome — so it decided to be a tadpole, so that it could get about in the world. It began to wiggle, and before long it had a head and a tail, and then it began to dart about in the sunlit water. This little tadpole soon got hungry and ate a great deal of green moss. He ate so much that he felt uncomfortable, so he split his skin that he might breathe more easily. Plop! went his little brown skin — and out popped two hind legs.

"Mercy!" said the tadpole. "I thought I was an egg until I began to wiggle; then I thought I was a tadpole. Now I have two legs, and I don't know *what* I am!"

Now it happened that Mrs. Mother-toad had laid that little egg and she knew all about him. She heard what the little tadpole said, as she hopped along the bank in her pretty speckled gown. So she said cheerfully: "Just be patient, and wait; you will soon be a fine batrachian reptile of the genus Bufo like your mama!" (Mrs. Mother-toad was a grown-up, and used big words, but she just meant to say that he would soon grow four legs and be a toad, like herself.) And sure enough, this little tadpole grew two front legs, and became a batrachian reptile like his mamma—which was the proper thing to do.

He climbed out of the water, and sat on a stone admiring his pretty new skin. He had scarcely had time to say: "What a handsome spick and span, speckly person I am!" when the blue June sky got dark, and it began to rain. Tinky-tink-tink! It sounded just like little fairy feet pattering over the water, and tripping through the grass.

"Dear me! This funny old world does something new every day!" said the little toad, who had never seen the rain before.

Mrs. Mother-toad replied: "My son, I will give you some advice. When it rains, it is a very fine time to hop along in the world."

"Why should I hop along in the world when I am doing very well here?" grumbled the little toad.

"Why—because it is the proper thing to do!" replied his mama as she hopped on. So the little toad followed his mama into the world, right through the soft gray rain, because it was the proper thing to do.

His new speckled legs were fine legs, and they hopped him over the ground very fast. Plunk! Plunk! Plunk! — on and on he went until he hopped right into a geautiful garden of flowers. The Pansies and the Poppies and the Hollyhocks

When the cat patted the toad with his paw, the little toad would puff himself into a big ball, and frighten the cat away.

were glad to see him. They nodded their blue and red and golden heads, and murmured: "Here comes another toad! He will eat the worms and bugs that spoil our pretty petals. How do you do, little fellow!"

"Now, my son, did you hear the flowers say good day?" said Mrs. Mother-toad.

"I did," replied her little son.

"They have welcomed you to their garden. This will make a nice home, so you had better stay right here and work for your living!" said Mrs. Mother-toad. So the little toad stayed in the beautiful garden, because his mama told him that it was the proper thing to do.

What a pretty, perfumy, pleasant little home it was! Birds swooped down out of the blue sky and drank water from a dancing little fountain. Butterflies slowly waved their wings as they sipped honey from the hollyhocks, and cool, merry little breezes skipped through the green grass, calling whish-sh! Every night the big warm sun sank behind tall trees, and pleasant little stars came out and winked in the dusky sky. Along came little flying things fluttering through the shadows; then the little toad flipped out his sticky little tongue and caught a fine dinner of insects and worms that spoiled the pretty petals of flowers. When he had eaten enough, he fixed his big jewel-like eyes on the stars, and enjoyed the night, thinking, "How very pleasant this world is, if one always does the proper thing!"

One summer day after another passed pleasantly, and the little toad was happy. When it rained, he drank water through his speckled skin. When it shone, he hopped among his flower friends, or just sat still in the cool grass. Sometimes a cat would come pitty-pitty-pat through the flowers, and pat the little toad with his paw. The little toad did not like this at all. He would puff himself into a big ball, and frighten the cat away — for that is the way a proper toad should do.

Everything went well until once more the funny old world decided to do something new. The nights grew cold, and the flowers bloomed no longer. The blackbirds and the robins gathered in groups and had a great deal to say about going south for the winter. The little squirrel who lived in an oak tree gathered acorns and hid them in the brown earth. The butterflies fluttered away and came back no more. The maple trees turned golden and their leaves fell softly all day long.

"Good-by!" sang the birds, as they flew toward the southland.

"Good-by, my friend!" chattered the squirrel, as he moved into the warm tree trunk for a winter nap.

"Good-by, little speckly toad! We are going into the brown earth until winter is gone," whispered the flowers.

"But why are you doing that, when we are all so happy here?" grumbled the little toad.

"Proper thing to do — woo — woo," blustered the North wind, as he made the garden folk shiver with his icy breath. The little toad shivered too, but he wouldn't go into the earth and take his nap.

The little toad was cold and lonesome. The insects and worms were gone, so he was hungry, too. He crawled under a stone and watched a little girl who was shaking the gold from a maple tree.

His mother came along and said: "When autumn comes, and the trees rain gold, it is time for little toads to go to sleep. Dig a nice hole for yourself, deep in the warm earth, and hibernate!" she added wisely — for she still used big words.

"What is 'hibernate'?" asked the little toad.

"Why — that means to go to sleep and sleep hard until spring," said his mother, as she began to dig in the soft brown earth.

The toad grumbled: "Go to sleep in the ground? Why that won't be one bit of fun — just to sleep in an old hole in the ground."

"If you do not sleep, you will miss all the happiness of the morning of spring," replied his mother, as she went to bed in the warm brown earth, while the sun smiled as if he *knew* she was doing the proper thing!

The little toad poked his head into the hole and called to his mama: "I shan't go to bed, for I'm tired of doing the proper thing!"

So he wouldn't go to sleep and he *wouldn't* go to sleep! He got thinner and thinner, until his speckled trousers hung in little folds. He could not find any bugs to eat, so he got hungry. Then, one day, little white, fluttering things fell from the sky. The little toad flipped out his tongue and ate one, for he thought it was a new kind of bug, but the little white thing was very cold. The poor little hop-toad had swallowed a snowflake. Oh! how it chilled his little empty stomach! He was frightened, for the snowflakes began to tumble out of the sky in flocks, and the whole world began to turn white.

"Dear me! I *do* wish I had gone to bed in the nice warm earth when my mama-toad *told* me to go!" he cried, as he wiped tears from his golden eyes.

"That would have been a *very* proper thing to do!" moaned the maple tree, who had shaken off her golden leaves and put on a shining crystal gown of snow.

There is no telling what *would* have happened to this little spick-and-span, speckly toad if the little squirrel hadn't come out of his warm nest, in order to dig an acorn for his lunch. "Dear me suz! Aren't you in bed *yet?*" he chattered.

The little toad sat shivering on the cold gray stone, but he managed to say:

"No-no, and I w-wish I had done the pup-roper *thing!*"

The squirrel replied: "Well, don't *cry* about it! Just begin to dig in this little hole where I hid my acorn, and dig fast. Maybe you can get into bed yet!"

So the little toad began to dig fast, in order to do the proper thing at last. He dug with all his might into the little hole the squirrel had made.

The ground was cold and hard, so he had to dig with all his might. The tears ran down his nose, and he wiped them away with his tired, dirty little fists. He shivered, and his back ached, but he still dug fast. Down, down into the earth he dug, and all the time the old North wind was tugging at his heels, saying: "Woo —oo—oo; I'll get you!"

There is no telling what would have happened to the little speckly toad if the squirrel hadn't come out of his warm nest in order to dig an acorn for his lunch.

"No you won't! I'm almost through!" said the little toad joyfully, as he wriggled into his warm little hole and covered himself with a blanket of brown earth. He curled himself up in a little ball, while sweet little voices whispered: "Glad to see you little toad!"

"Ah! so you have come to bed at last!"

"Awaken me if I sleep too late on the morning of spring!"

They were the voices of Pansy, and Poppy, and Hollyhock, who had gone to sleep in the earth at exactly the right time, in order to get up quite refreshed and happy on the beautiful morning of spring. So it happened that the little toad did the proper thing at last!

Moral:

When bed time comes, it is best to do the proper thing!

DID you like the story of "The Little Toad Who Wouldn't Go to Sleep?" Then you'll like the next story—all about "The Little Fox Who Didn't Like to Drink."

Miss Jenkins has written a number of health stories for children; both the big and little readers of HYGEIA will enjoy them.

HEALTH NEWS AND VIEWS

BALANCED DIET MEANS BETTER TEETH

Out of 315,072 school children examined in New York City, 101,160 were found to have defective teeth. In other words, about one in three were suffering from dental difficulty. Ill balanced diet of pregnant women and young children accounts for a large percentage of bad teeth.

If one out of each three of the more than one million grade school children in Illinois have decayed teeth it would require one thousand dentists a full year to fill the teeth, each dentist working eight hours per day and allowing but one hour to each child. The job would require the entire services of all the dentists in the state for more than a month. This view of the problem indicates that preventive, rather than corrective, measures must be depended upon if future citizens are ever to enjoy reasonably good teeth.

Dr. Taliafferro Clark of the U. S. Public Health Service lists more than seventy-five items essential to a well balanced diet of a school child. Of course he does not recommend that all seventy-five should be included in each meal, but for economy in money and health most of them should appear on the menu at least twice per month. The items include various sorts of meats, eggs, fish, oysters, bread, cereals, vegetables, dairy products, fruits and berries. Nuts and candies are not mentioned in the list.

Many authorities contend that proper diet for prospective mothers and young children would correct the most of our dental ailments. Teeth and bones are made largely from calcium and phosphorus. The foods richest in these chemicals are milk and leafy vegetables like lettuce, spinach and cabbage. They are also found in direct sunlight. It is hard to see how one can develop hard, durable teeth without eating foods rich in the material of which teeth are made. Exposure to sunlight helps to form firm bones and teeth.

COMICS FAVORITE INDOOR SPORT

The comic strip is the great American indoor sport; statistics have proved it. Four fifths of all Americans between the ages of 4 and 24 follow the doings of the Gumps or Mutt and Jeff, or other actors on the paper stage of the daily and Sunday journals.

Dr. Harvey C. Lehman of the University of Chicago has made a statistical study of the play preferences of American youth, questioning thousands of persons and tabulating their replies. At the age of 12 a maximum of 95 per cent of boys and girls read funny papers, and the average for all persons questioned is 80 per cent.

Many of the activities which young folks like are seasonal and vary with the weather, said Dr. Lehman. The play activities of children are much more varied than those of adults. Boys are most alike in their play activities while in their teens. In the spring both sexes have the largest number of seasonal recreations, and the least in the fall of the year. Football is more confined to one season than any one activity.

Contrary to the popular opinion marbles were not found to be a game confined to the spring of the year. Reports showed that marbles were being played at one or more places during each of the three seasons studied. The interest in marbles is most pronounced in boys between the ages of 8 and 12, when about 40 per cent of boys indulge.

Automobile riding is a form of play in which the sexes participate about equally. At the upper age limits about 75 per cent of the girls and about 65 per cent of the boys indulge in automobile riding. About 60 per cent of the older boys and 28 per cent of the girls drive automobiles.

RECREATIONAL PROJECTS CHANGED EVERY TWO WEEKS

Interest in a single playground activity can be sustained for the masses only for a period of two weeks, in the opinion of C. H. English, director of playgrounds for the Chicago public school system. At the end of that time a new project should be ready.

For instance, if the project for a two weeks period is ocarina playing, a contest at the end of the second week will bring out the winners on the "sweet potato" instrument, and only the winners will continue interest in that project, meeting the winners from other playgrounds in new competitions. For the mass of playground attendants, an entirely new activity will begin.

As worked out on the Chicago playgrounds, the sustained interest of the few in certain activities may mean that during a given period as many as twelve projects are being carried out, but for the masses only one play project is on, it changing every two weeks. During the year as many as 120 separate recreational projects are carried out.

MEASLES SOMETIMES FATAL

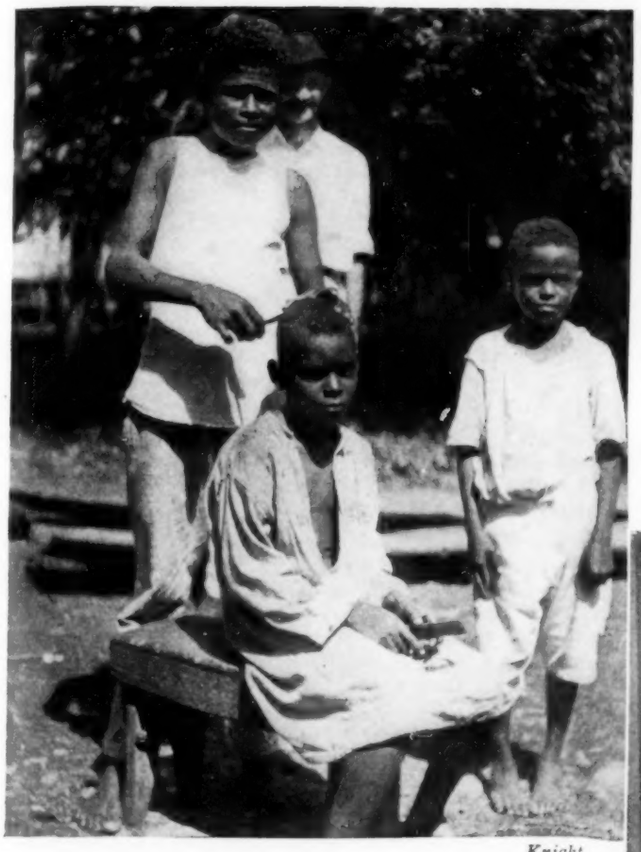
Having measles is a more hazardous affair than is ordinarily supposed. Approximately 300 children have succumbed to it during this year in Illinois. Last year it caused 225 fatalities and 561 the year before. Very few escape the disease in childhood, about one out of each hundred failing to recover.

Widespread epidemics of measles recur about every third year. In 1917 there were nearly 50,000 cases reported in Illinois. Prevalence dropped to less than 20,000 cases in each of the next two years and jumped to about 40,000 again in 1920. Two more light years were followed by about 50,000 cases in 1923. The reported incidence for 1924 was 20,144 cases and it is slightly more than 25,000 for this year, making an epidemic of large magnitude not improbable for 1926.

VACCINATE AGAINST SPOTTED FEVER

A vaccine has been made from the ground bodies of disease-carrying cattle ticks that gives immunity to Rocky Mountain spotted fever, transmitted by the same parasites. Dr. R. R. Spencer and R. R. Parker of the U. S. Public Health Service have successfully vaccinated rabbits, guinea-pigs, monkeys and human beings against this much dreaded fatal infection of the western cattle range. Up to the present time thirty-four persons have been vaccinated against the infection and none of these has succumbed to the disease.

"We see no reason why injections may not be repeated each spring," said Dr. Spencer, "in persons whose occupations definitely expose them to infection. It would be impracticable to vaccinate the general population of the spotted fever region, but it is believed the vaccine would afford a protection to those exposed."



Knight

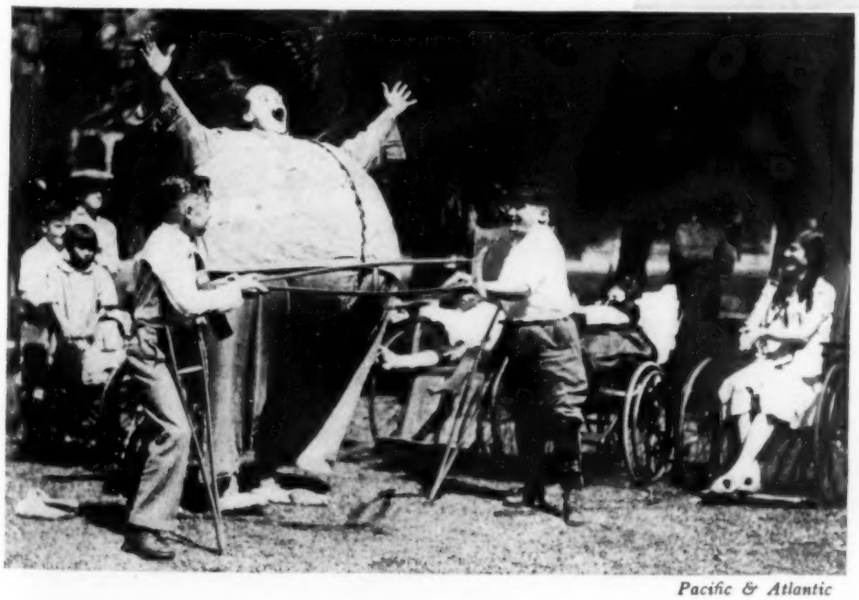
BARBER OF GARACHINE

In a native black village in the interior of Panama this boy goes from house to house in his tonsorial pursuits. No soap or water is used during the operation. The head is shaved with a home-made razor-like knife.

SUBSTITUTE FOR OLD SOL

A new method of sunning little sufferers from rickets during the months when there is little sunshine is being tried in a Chicago orphan asylum. The little tots seem to enjoy the synthetic sun treatment.

International



Pacific & Atlantic

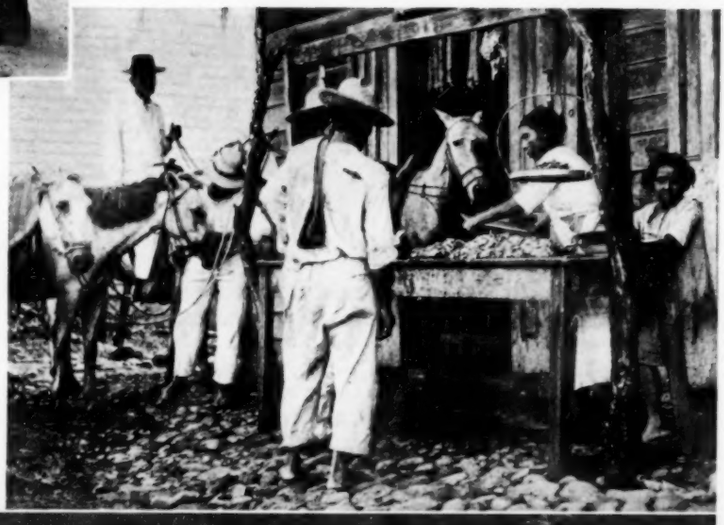
CRIPPLED YOUNGSTERS ENJOY CLOWN ANTICS

Wan faced youngsters at the Los Angeles Orthopedic Hospital laughed in glee at the antics of the clowns of a visiting circus. The youngest clown was ininflated to the proportions of a balloon, and he tumbled, rolled and fell to the complete delight of the youngsters, who could not go to the circus.

Pacific & Atlantic

UNCLE SAM GUIDES IMMIGRANTS UNGUIDED BY FRIENDS

All immigrants who have no one to meet them at Ellis Island, N. Y., after having successfully passed the rigid entry examination, are tagged and shipped to their destination.



Knight

A MEAT MARKET IN THE INTERIOR OF PANAMA

This meat market doesn't look clean, but the health officer who sent the photo says that one can always depend on getting fresh meat at markets of this type. Only a few animals are killed each morning for consumption. The remaining unsold meat is pickled or fed to the hogs.

Courtesy of the American Red Cross

RED CROSS INSTRUCTOR TEACHES CLEANLINESS

It is not professional ethics for a teacher to wash the face of a pupil, but this embryo kindergarten teacher has a willing subject, and the children are spellbound as they listen to a story about the good fairies whose names are Fresh Air, Sunshine, Soap, and Water.

QUESTIONS AND ANSWERS

If you have a question relating to health, write to "Questions and Answers," HYGEIA, enclosing a two-cent stamp. If the question is of general interest, the answer will be published; otherwise it will be sent by mail. Questions are submitted to recognized authorities in the several branches of medicine and answers framed by them. The names of correspondents will not be published. Diagnoses in individual cases will not be attempted nor treatment prescribed. Answers to questions relating to beauty will be found in the "Healthful Beauty" department of this magazine.

Water Before Breakfast

To the Editor:—The Camp Fire Health Chart grants points for drinking two glasses of water before breakfast, but does not specify whether the water should be hot or cold. Is drinking water before breakfast an advisable practice? If so, should the water be hot or cold? L. E. S., Iowa.

Answer.—In the morning before breakfast the normal stomach is empty except for the presence of about one-half ounce of gastric juice, the normal fasting gastric juice secretion.

Many persons drink too little water. No criticism can be directed at the habit of drinking a glass or two of water in the morning before breakfast; it tends to maintain an adequate water content in the body. It should not be assumed, however, that drinking water before breakfast has any specifically favorable influence on the digestive process. Suitable amounts of water taken at intervals during the day are probably just as beneficial as water taken on arising.

It is not wise to take either excessively hot or cold fluids into the stomach at any time. Moderately cold water has a more stimulating effect on intestinal movement than does hot water.

Ulcer of the Stomach

To the Editor:—1. Is a diet the only cure for ulcers in the stomach? If not, what other cure is there?

2. I have heard that ulcers of the stomach never heal permanently. Is this true?

3. Why is it that some ulcers do not show in x-rays? E. M. P., Minnesota.

Answer.—1. A suitable diet is an important factor in the medical treatment of ulcer of the stomach. Diet is combined at first with a course of hospital treatment, but the diet is continued for many months after leaving the hospital. The patient must be placed in the best of general health and whatever remedial measures are necessary for that purpose are instituted at the same time.

2. Ulcers do heal permanently. Only the old, large ulcers do not heal, and these may be entirely removed by operation.

3. Practically all ulcers of the stomach may be demonstrated by the x-ray. Less than 5 per cent cannot be demonstrated as the ulcer may be in an early stage or may lie in a position which is difficult for x-ray demonstration.

Correcting Stooped Shoulders

To the Editor:—Can a person, 21 years old, who is broad or thick in chest measurements and either round or stoop shouldered have this condition remedied? In correcting this condition, what is the best procedure to follow? How does such a condition affect the height? When does a person attain full growth? S. M. G., Nebraska.

Answer.—Most cases of round shoulders can be improved after the age of 21, although this condition is much easier to correct when one is younger. Exercises are useful; these strengthen and shorten the muscles which pull the shoulders together and the head back. A good exercise to use is to stand with the arms extended horizontally forward and parallel, fling the arms vigorously back in the horizontal plane as far as they will go and at the same time pull the head back, then return slowly to the first position. In taking this exercise the hands should never be lower than the shoulders. If this exercise is persisted in, gradually increasing the number of times it is done each day, it will usually have a good effect.

Round shoulders do not affect the height unless they are due to excessive curvature in the spine in the region of the chest. Most persons have completed their growth by the age of 18; some persons increase in height after that age.

Dry Hair

To the Editor:—My hair is dry and coarse. What can I do to make it soft and to have the necessary amount of oil in it? J. J. McC., Maryland.

Answer.—Ordinarily the best application for supplying the necessary amount of oil to the scalp is a mixture of alcohol and castor oil. The amount of oil can be varied to suit the requirements of the individual case. This mixture is applied to the scalp and rubbed through the hair until it is evenly distributed. When the alcohol evaporates, the hair is oiled.

Wood Alcohol Poisoning

To the Editor:—Please inform me whether the vapor of wood alcohol is injurious to eyesight? I refer to the vapor arising from alcohol in the radiator of a car when it becomes heated and in contact with the eyes. H. W. B., Iowa.

Answer.—Wood alcohol is injurious to the eyesight not from any local effect, but from its absorption into the system and the consequent inflammation of the optic nerve.

Cases of poisoning from wood alcohol, with resulting impairment or destruction of vision, have resulted from the inhalation of the fumes. Unless a considerable amount of the vapor of wood alcohol is confined to a relatively small space, there is no danger of a person's becoming poisoned by it.

Tuberculosis and Marriage

To the Editor:—I have a friend who has tuberculosis. After she has an arrested case, how soon would it be advisable for her to marry? If she should ever have any children, would it be likely to renew the trouble? E. M., Wisconsin.

Answer.—An axiom subscribed to by most, if not all, students in tuberculosis is, "The tuberculous woman should not marry, the tuberculous wife should not conceive, the tuberculous pregnant woman should not carry through." In most cases this axiom is a correct answer to the tuberculous woman. However, tuberculosis is curable; therefore, if the tuberculous woman achieves a cure, it seems that she should be permitted to marry. But a person who has been tuberculous

may not be considered cured until two years have elapsed since the last demonstrable sign of the disease has disappeared. It may be said, then, that the cured woman may marry after two years of unimpeachable (as it refers to tuberculosis) health. Such a woman may be expected to safely take up her duties as a wife. As to bearing children, the patient herself should be individually considered. The danger to her as a person with an improperly healed tuberculous lesion is great. If the lesion is actually healed, she is as safe as the average woman. It is known that the function of menstruation is accompanied, in the presence of tuberculosis, with a rise of temperature each month. This rise is due to a renewed activity in the diseased lung because of certain substances liberated by the menstrual process which have been demonstrated to be inimical to the connective tissue of the tuberculous lesion. Now, after a child is born of a tuberculous mother, a similar toxin is liberated by the uterus as it returns to its non-pregnant size. But the flow of toxin is not confined to the three or five days of menstruation, but to a period of about six weeks, during which the diseased lung is attacked and broken down. This is why a tuberculous woman succumbs so rapidly after confinement. She may, however, go through one pregnancy, or a second, only to break down with the third. A woman who has once been tuberculous should be sure that she is cured.

Vision

To the Editor:—I suffer from an eye trouble in which my pupils fail to close when light strikes the eye. I am unable to keep from squinting in ordinary light. I wear glasses which suit me in so far as they correct my astigmatism and near-sightedness, but the glasses fail to help this sensitivity to light. I wear colored lenses; one pair of glasses is grade A, only slightly dark; the other pair is grade C, very dark. These help considerably but I continue to suffer from eyestrain. As a teacher of physical education, I am constantly exposed to strong light. Wearing a visor in addition to the black glasses doesn't entirely help me. Can a cure be effected in this case by glasses or some other measure? D. B. B., California.

Answer.—Paralysis of the muscles of the pupil, due to some interference in the nerve supply to the muscles of the two eyes may bring about the condition described. Since both eyes are affected, the cause probably lies in the brain center which controls the third nerve. Apart from the necessity for correcting errors of refraction, glasses have no curative value; they are merely a crutch which may aid by eliminating the excess light. The same result can be accomplished by the use of drops to contract the pupils. However, you should not attempt to use such drops without first consulting your oculist, for you might do more damage than good. The drops are, of course, merely a palliative measure and will not cure the condition any more than eating a hearty meal will relieve you of hunger for the rest of the week.

Diabetes and Insulin

To the Editor:—What is insulin? How is it made and from what materials is it composed? What is the nature of diabetes? D. E. K., California.

Answer.—For an understanding of the nature of diabetes, the body may be compared to an automobile. An automobile burns gasoline and uses the energy obtained to do work. The body takes the energy stored in foods and accomplishes its work. The starch foods and sugars (carbohydrates) are the most important source of muscular energy. By means of digestion, these are all changed into a simple type of sugar, glucose. A normal person can burn large quantities of glucose. A person having diabetes can burn only a limited quantity of glucose; a person who is totally diabetic can burn no glucose. This unburned glucose accumulates in the blood and appears in the urine as waste. It is easily detected and then the patient is said to have diabetes.

Insulin restores to a person having diabetes the power of burning glucose. A certain amount of insulin will enable the body to burn a fixed amount of glucose, no more and no less. Hence, the degree of the diabetic defect must first be measured before a corresponding amount of insulin can be given. Insulin bodies were first extracted from the pancreas (sweetbreads) and later from a wide variety of sources, which suggests that they are the normal constituents of all cells burning glucose as a primary energy source. The commercial preparations are purified extracts of beef or hog pancreas. It may be said that diabetes exists when the pancreas fails to furnish a quantity of insulin sufficient for the burning of the daily glucose ration.

Perspiration—Mineral Oil

To the Editor:—What would you advise doing for a person who cannot perspire? I am 24 years old and have good general health except that I have always been underweight. My health has been helped by the removal of my tonsils and by overcoming constipation.

While I always perspire but very little, perspiration has almost ceased now. Exercise, hurry, a high temperature of atmosphere, all raise my temperature. The highest temperature that I have noticed has only been about one degree above normal, but even that makes me uncomfortable. Of evenings, when the air is cooler, my temperature may be subnormal. My kidneys are active. Is this because they carry off all the liquid waste of the body? Would this overwork them?

Will continued use of mineral oil for constipation be harmful? H. B. M., Indiana.

Answer.—Decreased sweat function may be associated with various diseases. An examination should be made by a physician. Avoid exposure to heat as much as possible. The urine is probably increased in quantity to compensate for the reduced sweat excretion.

Mineral oil for constipation is not harmful, but it is best to establish regular daily bowel movements by diet, exercise and regular habits, rather than to use laxatives regularly.

To Stimulate Growth

To the Editor:—What can I do to stimulate the growth of my daughter, who is nearly 16 years old and is only 54 inches tall and weighs 87 pounds? She is normal mentally and is in good health, but has grown about one inch or a little less in the last four or five years. Any suggestions will be greatly appreciated. Mrs. R. G. P.

Answer.—Some of the factors that determine growth are but partly understood at present or are beyond human control. In the life of the individual there are factors of heredity, that is, small parents will, on the whole, have small children and vice versa, although there are occasional exceptions to this rule. It is well known that prolonged undernutrition causes stunting of growth. This undernutrition may either be too little food or too little of certain kinds of foods such as eggs, milk and fresh vegetables. Retarded growth brought about by faulty diet can usually be overcome gradually by correcting the diet.

There is another group of factors that may also cause subnormal growth, that is, decreased activity of some of the body glands like the thyroid and possibly the pituitary glands. When this condition is present other symptoms are usually developed so that a good

doctor can usually tell whether the stunted growth is due to this factor. Again, normal growth may be merely delayed and come on several years later than usual for the average child.

Pneumothorax Treatment for Tuberculosis

To the Editor:—1. Please give details underlying the pneumothorax cure for tuberculosis. 2. Is this a positive cure? 3. If so, at what sacrifice? Will part of the lung never reexpand? 4. What are adhesions? 5. What might happen if an adhesion is broken? 6. Will a collapsed lung reexpand? 7. If so within what period? 8. Why is it necessary to take this treatment for so long a time? 9. What is the advantage of continuing this treatment? 10. How is the gas given, in the lung or pleura? 11. What harmful effect might this gas have on the lung? R. L. H., Maryland.

Answer.—The details regarding the pneumothorax treatment are as follows:

1. The lungs are suspended in the pleural cavity. Air or nitrogen gas is injected into the pleural cavity which causes a collapse of the lung and prevents it from expanding and contracting. In other words, it renders the lung inactive. The air or gas injected is in reality a splint on the lung.

2. It is not a positive cure. It is successful in about one case out of ten.

3. If the treatment is successful the whole lung on the affected side is collapsed.

4. Adhesions are bands of scar tissue between the lung proper and the thoracic wall; these adhesions will sometimes prevent the collapse of the lung.

5. With the breaking of an adhesion a sharp pain is experienced or a pleurisy may be reactivated.

6. and 7. A collapsed lung will usually reexpand.

8. It is necessary to keep the lung completely collapsed for a long time.

9. The advantage of continuing this treatment is in keeping the lung inactive.

10. The gas is injected into the pleural cavity, not into the lung. It is given through a needle. The gas seldom has any harmful effect.

Vision

To the Editor:—I am 16 years old; for over two years there has been something the matter with my eyes. There seems to be a movement in front of my eyes that looks like a swift fine rain or mist falling. At times it is hardly noticeable, and at other times, especially after reading or any hard physical work, it is so bad that it makes me feel dizzy and miserable. The peculiar part of it is that the symptoms continue day and night; it never stops and I notice it more in a dark room that anywhere else. I read a great deal and I thought that perhaps this caused the condition. I do not seem to have trouble reading fine print, and I do not often have headaches.

Will you please advise me?

Miss S. S., Minnesota.

Answer.—There are several possibilities included by the description of the trouble. It is possible that this person is a victim of the so-called Muscae Volantes (flying flies). In this condition, the person sees moving gray or dark spots before the eyes more or less continuously. These spots may be merely pinpoint in size or they may be so large that they are mistaken for winged insects. The movements are rapid and are consequent to movements of the eyes. It is also possible that there is present an inflammation of the optic nerves, due to some disturbance situated within the nose, and that the mist seen is the result of the irritation of the optic nerves. Again, it is possible that there is an irregular form of nervous headache with the eye symptoms preceding an attack; this frequently results in seeing only half of an object. Furthermore, it is barely possible that this person has a high uncorrected error of refraction and that the resultant visual strain causes the symptoms. It would be advisable for you to consult an oculist; the condition outlined requires a full knowledge of diseases of the eye, and not merely a knowledge of how to fit glasses.

Urticaria

To the Editor:—I have an itching which has been termed urticaria and which seems to be present at nearly all times. After scratching my skin, my fingernails leave welts which do not disappear for about one-half hour. This itching is annoying when out in company or while busy at my work; in spite of everything I do, it still prevails. It has been bothering me since February, 1925.

I have had food tests through the epidermis of my arm to find out if any food or foods caused the itching. A change in diet seems to do no good. I have also taken ultraviolet ray treatments with no results.

Perhaps this is a nervous condition and is only mistaken for urticaria, for I seem to be bothered most when overheated or when hurrying with my work. Sometimes I go for days without annoyance and at other times I have the itching several times during the day. C. A. F., Iowa.

Answer.—The disorder described is dermagraphia, a form of urticaria. Sensitization of the skin of this type is usually not produced by food. It sometimes comes from infection, localized in the teeth, tonsils or elsewhere, or from some disturbance of the glands of internal secretion. Suggestions for treatment would be useless without further information.

To Remove Odor of Urine

To the Editor:—What will remove the odor from cloths soiled with urine? The person of whom I am writing is an elderly woman patient with bladder trouble. Soaking, boiling, washing with soap, rinsing in several waters, drying in the open air fails entirely to remove the odor, and the use of new cloths each time is too expensive.

Practical Nurse, Pennsylvania.

Answer.—Inquiry has been made of several hospitals with large experience in the laundering of soiled diapers, bedding, sheets and articles of clothing. Their experience may be summarized as follows:

Articles so soiled should not be allowed to dry before washing, but should be thoroughly washed with running water, then washed with a bland soap and water, rinsed several times and aired thoroughly out-of-doors with exposure to sunlight. If these measures do not remove the odor, soaking in a weak solution of cresol, with another rinsing thereafter, and then drying in the sun may be tried.

Diet for Kidney Trouble

To the Editor:—What diet, if any, should be used for one with pus in the kidneys and inflammation of the bladder? Are acids bad for this condition? Will this condition cause headaches and pain or soreness at the base of the spine?

S. H. M., Texas.

Answer.—There are many lesions of the kidney that may produce pus in the urine, and for this reason it would be quite difficult to outline a diet without more knowledge of the exact type of infection. However, in a general way, one could say that a milk, cereal and vegetable diet would be safe in most cases, particularly if meats, meat extracts and highly spiced foods are omitted.

Acids are not harmful in some infections. Infections of the urinary tract may produce pain in the region of the spine and may, in some instances, produce headaches.

CURRENT HEALTH ITEMS

PREVENTING AVOIDABLE ILLNESS

The major part of all the absences of children from school is due to preventable illness. This loss of time by children results in increased cost to the municipal educational system, not only in providing unused educational facilities and the expense of educating retarded children, but also in loss of revenue from state educational allotments based upon school attendance, says Dr. A. M. Carr, health officer of Madison, Wisconsin.

Recently a study was made of the causes of absence among the school children of Trenton from November, 1924, to April, 1925. During this period a total of 182,803 days were lost from all causes by pupils in all grades of the public schools; of this number 105,718 days, or 58 per cent, were due to avoidable illness. Of the more than 100,000 days lost because of illness, 50 per cent were due to common colds and sore throats, 26 per cent to contagious diseases and 24 per cent to miscellaneous conditions, such as toothache, headache and indigestion.

It is impossible to estimate the cost to the city of Trenton of providing educational accommodations for the school children absent on account of illness, but the loss in revenue is measurable. The municipality receives from state funds an allotment of about eight cents for each child in school each day. The loss of 105,711 school days resulted in a loss of revenue to the city of more than $8,000.

In the prevention of avoidable illnesses there are two distinct services necessary: hygiene instruction, and disease control. The great number of illnesses recorded among the school children of Trenton indicates the new need for: definite classroom teaching in regard to hygiene and contagion; knowledge of the methods of spread of common colds and communicable diseases, emphasizing the importance of contact; daily records in each classroom of the causes of absenteeism, to be used as an index of health.

GOOD HABITS MAY BE TAUGHT

Tendencies toward thinking and acting in certain ways, which are called habits, are the outgrowth of training and experience; they are not inherited, says Dr. D. A. Thom of the U. S. Children's Bureau.

We begin to form habits at birth and go on through life, forming them quickly and easily in youth and more slowly and with difficulty as the years advance. The oftener the act is repeated or the thought is indulged in, the more lasting the habit becomes. Since habit formation begins early and is more or less constant throughout life, it is of great importance that emphasis be placed on establishment of desirable habits.

A young child is suggestible; he accepts without reasoning about it anything which comes from a person he looks up to. "My father said so," or "My mother did it," makes a thing absolutely right for a little child. Again, a child naturally tends to imitate the words, actions and attitudes of the people around him, and this makes it of the greatest importance that older people furnish him the kind of models they want to have copied. Furthermore, a child wants to please those he loves and wants to have them say so. At first it is only father or mother or some one in the immediate family whose good opinion he wants. Then it is the kindergarten or school teacher. Finally, at nine or ten, the praise or blame of his playmates or of the gang leader concerns him more than anything else. When this stage is reached, parents should not be disheartened and think that their boy is developing into a black sheep. It is a perfectly natural stage which children pass through and which calls only for greater care in the selection of wholesome companions.

This attitude of concern regarding what other people think is a force that parents may use in developing right conduct. Rarely is a child found who does not care for the approval of some one, and training should make a child realize that it is to his advantage to win approbation for desirable acts. Praise for unselfishness, kindness and general consideration for others tends to perpetuate that type of conduct.

EYES AND EARS DULLED BY LACK OF SLEEP

After staying awake two nights in succession, an individual may still be captain of his muscles and reasoning powers, but his eyes and ears may begin to play him queer tricks. This was shown in an insomnia experiment at George Washington University in which eight students took part. They were able to make as good records in tests of their mental alertness after sixty hours without sleep as they made in the beginning, but tests of their senses showed that efficiency of sight and hearing fell off as fatigue increased.

Dr. F. A. Moss, who directed the psychology tests, says: "It seems that so far as short operations are concerned, efficiency is not decreased by prolonged periods of wakefulness, but continuous effort is far from a safe undertaking after 35 or 40 hours of wakefulness. The ability to drive a car is little affected by the lack of sleep, but the monotony and rhythm of the moving car are likely to dull the wits of the subject and induce sleep in spite of his determination to keep awake."

The medical investigators who tested the physical condition of the students reported that loss of sleep caused pathological changes manifested by a decrease in red blood cells and hemoglobin and an increase in white blood cells. Blood pressure decreases, but no change was found in blood sugar or in basal metabolism. After eight to ten hours of sleep, the students were pronounced physically normal again.

GOOD WORK IS SMOOTH WORK

"The mind of a man is not less sensitive to irritation than his skin to scratches. If these occur, for instance, on the same part of his hand with a certain degree of repetition it will occasion no surprise if his grip fails him; nor is it to be wondered at, if ultimately his mind tends to lose its hold, when besieged by any too constantly recurring form of petty annoyance."

Mr. G. H. Miles and Mr. A. B. B. Eyre of the National Institute of Industrial Psychology have found in their studies that delays, even though they last for a few seconds, occurring with more or less irregularity during the busy periods are most harmful both to the state of mind of the worker as well as to his efficiency and productivity.